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CONTRIBUTIONS OF AGRICULTURAL ECONOMICS TO FARMING

CARL E. LADD
Cornell University

The various divisions of agricultural economics have been recognized in the curriculums of the colleges and universities for only a little over a quarter of a century; but a quarter of a century that has been packed full of economic changes. It has witnessed the extremes of prosperity and depression; it has seen the general price level rise two and one-half times in a five-year period; and twice within this quarter of a century, the general price level has fallen with record-making speed. The world has endured the greatest war and the greatest depression of all history, yet standards of living have risen to heights hitherto unknown. The problems of production have been so well solved that great apparent surpluses of farm products have come into existence while the problems of distribution have been so baffling that thousands of our people are ill fed and ill clothed. The birth rate is declining and we seem to be faced with a stationary, possibly a decreasing, population some time within the relatively near future. Malthus has been most thoroughly discredited. It is in this period that agricultural economics has come of age.

Farmers have operated their farms during rapid rises in the general price level when there was great prosperity and during rapid decreases when hard times were universal. Great changes in agriculture have been forced by mechanization of industry and farms, by transportation, and by changes in food habits. While the whole world has talked about the high cost of distribution, agriculture, like city businesses, has seen these costs continue, or even rise, in spite of all efforts to decrease them. One thing seems unchanging—whether we are biologists or economists, we continue to think that

whatever the condition is today so it will be in the future. We have not yet accepted the fact that this is a world of change with a normal expectancy that whatever the conditions are today, they will be greatly changed in the future.

Through all of these changes, agricultural economics and all its branches have grown and flourished and expanded. As economists we have been subject to the usual whims and transitory programs but in spite of these have built slowly and consistently towards a larger and broader fund of factual material and new principles of economics to guide us in this field. Most of the members of this group are not old enough in the work to remember all of the new programs that were expected to save the world or that were deemed important enough so that economists should devote whole sections of their annual association meetings to the discussion. A quarter of a century ago a great deal of effort and time was being put into the study of the duty of machinery, and I doubt whether many people in the room today know what is meant by that term. After this had been somewhat forgotten, we spent some years working vigorously on the problem of seasonal distribution of labor and carried this so far that we discussed many impractical plans for developing an equitable distribution of man and horse labor throughout the seasons. If you will look over some of the doctor's degree theses of twenty-five years ago, you will find charts upon which are plotted the distribution of man and horse labor by ten-day periods for every farm enterprise. Then someone hunted up the old law of diminishing returns, dusted it off, applied it to the field of agricultural economics, and it too conditioned some of our studies for a year or two.

We have had successive waves of complete cost accounts, of single-enterprise accounts, of farm budgets. To this list might be added a dozen or a score of other temporary programs; but if I come any nearer down to date, I shall be stepping on someone's toes. Always, we have had the problem that faces every group of scientists, to discriminate between those techniques that are really of great value and importance in building the science and those things which are merely passing fancies and of little permanent worth.

We have done our part to clutter up the language with new so-called scientific terms or jargon of the profession. Many of these are intelligible only to the scientist and of little value in making

our statements more definitive. Apparently, we are emerging from this stage of our development, for the program of the present meeting is particularly free from technical terms that would be unintelligible to the layman.

The contributions of agricultural economics to farming might be divided into two large groups: first, the contributions to the management and operation of individual farms; and second, the contribution to group action by farmers in the economic field.

Agricultural economics, through cost account investigations, has furnished basic materials for costs in farming. These are complete with a maximum amount of absolute costs and a minimum amount of overhead or general costs allocated on estimates. They are stated in units as well as in dollars and cents so that they may be applied to changing price conditions. They are sufficient in numbers so that sortings can be made and groups compared. In several states the cost account results are more nearly accurate and much more usable than the cost studies available in most city industries. Farm cost accounting was one of the first fields of agricultural economics investigation. It is slow and expensive but it has continued to yield factual data and has furnished us some of the best basic material. Farmers have followed these results carefully, and the selection of enterprises on individual farms has been strongly influenced by them.

At a very early period farm management developed and brought to a high degree of perfection the survey method of determining and comparing profits made by farmers. Farm management surveys were found to be cheap, quick, and productive of much basic material for the development of the science. They were well adapted for research, the results could be used with great advantage in teaching, and it was soon found that the survey method was admirably adapted for quick preliminary studies upon which could be based community programs. Practically all of the principles of farm organization resulted from surveys.

Through the use of cost account results, farmers of many regions have been able to decide the relative profitableness of enterprises and to select the enterprises which would combine to give them the greatest profit in their business. From a study of farm management surveys and cost accounts, principles of farm organization have been developed. Thousands of farmers have used these principles to organize more profitable businesses. Farmers in groups have

used these principles to make recommendations to their communities or their counties as to the most profitable types of farming.

Farm management surveys and cost accounting furnish the basic scientific materials upon which all agricultural economics extension work was originally started and today constitutes a large amount of the basic material used in extension. Farm management studies have greatly stimulated better production of crops and better management of animals because of the exact measurements of the profit to be derived from better practices. On the other hand, farm management studies have also modified and made more practical the recommendation of most biological departments which were prone to make recommendations that would move toward a perfection of production greater than is profitable under prevailing price conditions.

Agricultural economists have led in making reliable predictions as to the future profitableness of enterprises, the advisability of changing the size of business, the intensity of fertilizing, feeding, or culture in future years, the rate of borrowing, and many other factors. The outlook work, now conducted in every state, has come as a direct result of agricultural economics studies and depends almost entirely upon factual material prepared by the economists. Many of the factual materials employed in preparing the outlook reports are also used constantly by individual farmers in planning their farm business and in making daily decisions. In this way farmers today commonly use the beef-cattle cycle, the hog cycle, the sheep cycle, the horse cycle, and others.

The contributions of agricultural economics to the farmer as an individual may be generalized in this way. Agricultural economics has been the most important science in assisting the farmer to meet the needs for putting his farm on a business basis; it has changed his entire viewpoint from a predominantly biological one to a consideration of his farm as a business unit; it has helped materially to prevent the development of a peasant class; it has helped the farmer to take his place among the businesses of the world and to exchange his products wisely in the world market in such a way as to raise his own standard of living.

It is largely through agricultural economics that the farmers of the Nation have come to have some understanding of the public problems of agriculture and of the relation of agriculture and industry to other parts of the national economy. The extension of the

Smith-Lever Act to the various states and the development of a great extension teaching system has furnished a vehicle admiraby adapted for the beginnings of group action among farmers. Here could be conducted the basic educational work necessary before intelligent decisions could be made. Through extension, groups of farmers received training in working together in solving their own problems. The universal use of agricultural economics material in these extension groups has made it possible for them to proceed upon sound scientific bases in their public activities and in the public activities of the other groups which they promoted.

It is largely as a result of agricultural economics extension work that the best of our cooperative marketing activities have grown up. Agricultural economics research in the field of marketing has worked hand in hand with the growth of cooperative associations, helping them to organize, helping them to operate and studying the successes and failures of those operations. Agricultural economics has furnished the basic factual material, the basic business policies, and the economic principles upon which sound cooperative marketing and purchasing has been built. It must also be admitted that every cooperative marketing organization has been a laboratory experiment which agricultural economists, if they are wise, have used to the limit in building this field of knowledge.

We all recognize that the problem of efficient distribution of goods among all peoples is one of the most difficult and most vital that faces society today. The problem is as unsolved in industry as it is in agriculture. It is probable that agriculture has made as great progress with this problem as has any other business but the great problem of the present generation is the question of efficient and complete distribution of all goods among all people. There is every reason to believe that this field of investigation will yield to the scientific method just as have the problems of farm production. During the next generation some of the greatest opportunities for scientists to promote the welfare of the human race will be in the field of distribution. This field is, of course, particularly important to farmers who are primarily the producers of raw materials.

Here the agricultural economist has already laid a foundation and it is the economist that must be depended upon to build most of this program in the future. It seems reasonable to predict that the greatest progress to be made in any agricultural science during

the next generation will be in the general field of distribution, under the guidance of the agricultural economists if they are capable of measuring up to the opportunities.

Although I may be invading Dr. Tolley's field on the contributions of agricultural economics to human welfare, still I must mention here the contributions to farming that have been made through land-use studies. The character of the land is a controlling factor in the success of any farm. Tens of thousands of farmers have failed simply because they were on poor land. Tens of thousands have failed because they have attempted to grow orchards on lands unadapted for orchards or to develop some other type of farming on land that was unadapted for the purpose. Soil scientists have furnished us with much of the basic material for the work of the agricultural economist in this field but it is through the accomplishments of such land economists as those in Wisconsin and, may I add, in New York, that it has been possible to analyze the problem and to classify land areas in such a way as to prevent much human suffering. The work in land economics has been of inestimable value to tens of thousands of farm families.

Perhaps no field of agricultural economics has seen such rapid acceptance of its teachings during the past five years as has the field of land appraisal. Until the time of the great depression very little of the land appraisal of the country was on a scientific basis and little use was made of the available scientific materials. Largely through the leadership of the Farm Credit Administration this situation has been entirely reversed; today most of the farm mortgages of the United States are placed and administered on the basis of some knowledge of scientific land appraisal. Although our knowledge is entirely too fragmentary and our science is too new, yet it is already yielding great values in terms of sound business and human welfare.

In summarization, it is the agricultural economist, through farm management, who has done most to place the American farmer upon a sound business basis to help him to organize his farm as a successful business unit. In the transformation of the farm from a biological unit to a unit which is a combined biological, sociological and business unit, agricultural economics has furnished the basic material, has established the scientific principles and has helped the farmer to translate them into action. Agricultural economics has furnished factual materials and economic principles to guide

the development of marketing of farm products either through cooperatives or through private business. Agricultural economics has developed a system of land classification which is the basis for successful selection of farms, for the successful organization of farm businesses in a particular land class, and which in the long run is one of the bases of sound land appraisal for credit purposes.

If we are ever to have a true economy of abundance with an opportunity for everyone to produce fully and an opportunity for each to obtain the necessities and luxuries that make for a higher standard of living and a more abundant life, then all the channels of distribution must be cleared of obstructions, shortened, and made more efficient. This is not only the job of the agricultural economist, but it is the great opportunity for the agricultural economist during future generations.

CONTRIBUTION OF AGRICULTURAL ECONOMICS TO THE GENERAL WELFARE

H. R. TOLLEY
Bureau of Agricultural Economics

The inscription over the largest government office building in the world reads, "Dedicated to the Service of Agriculture, for the Public Welfare," and carries implications of interest, I suppose, to every agricultural economist. The main implication is that there is a relation between agricultural economics and the general welfare. A corollary implication in my mind is that we may have reached a time when agricultural economists need to reexamine that relation.

Let me give three reasons for thinking that:

In the first place, agriculture is one of the basic activities of our current American civilization. Some may scoff at "agricultural fundamentalism" and argue that agriculture is simply another means of endeavoring to make a living or obtain a profit, but since our six and one-half million farms are able to supply employment or a means of living for so considerable a segment of our population, are able to account for so large a volume of our railroad traffic, to account for so large a portion of our manufacturing activity and export trade, and to supply the raw foodstuffs to maintain approximately one million wholesale and retail establishments, it seems reasonable to say that what affects agriculture affects almost every element in our national population, and that agricultural welfare and general welfare are closely interrelated.

Second, agricultural economists are educated in considerable part at public expense, usually spend the greater portion of their professional life in public employ or on some public payroll, and are peculiarly dependent upon public resources for the carrying out of the activities and programs which they see fit to encourage or recommend. Over 100 of the 116 agricultural economists whose names appear on the programs for this session of the Association, for example, are now connected with some tax-supported institution.

A third reason why agricultural economists may need to reexamine the relation between their work and the general welfare is that we seem to be reaching the end—if we have not already reached it—of the exploitative era. In this era it was logical that

our economic thinking should be dominated by a highly individualistic philosophy. I suppose the philosophy peculiar to the era will disappear with it. It would be unfortunate if our economic thinking failed to note the passing. At any rate, as our civilization and economy become more complex, and as we move out of the exploitative era, the economist's concept of the general welfare necessarily changes, and so does the role of government in serving that general welfare. We already know how significant these changes are to agriculture; today I wish to suggest that they are equally significant to agricultural economics.

In addition, it so happens that I have a direct personal interest in the relation between agricultural economics and the general welfare. In the recently reorganized Bureau of Agricultural Economics we are expected to spend a very considerable portion of our time in the immediate future in an attempt to reorient economic research and planning within the Department. Consequently, while the first part of this paper will discuss the relation between agricultural economists and the general welfare, and the function of the agricultural economist in the field of policy determination, the latter part will discuss the fields of activity in which I believe the Bureau of Agricultural Economics should engage if it is to be of greatest service to both agriculture and the general public.

I

I have no precise definition of "the general welfare" to offer. Doubtless the term represents a concept for which each of us has a somewhat different definition. We can all agree, however, with Secretary Wallace, "from the material point of view . . . the general welfare consists of a steady, balanced increase in the production of physical goods more evenly distributed among all the people, but not so distributed as to destroy the initiative upon which the incentive for wealth production is based."[1] We can subscribe to that definition without forgetting that there are aspects of life which cannot be brought under the measuring rod of money or reduced to physical quantities. Marshall never tired of pointing out that the study of wealth is only a part of economics. On its other, and more important side, it is "a part of the study of man . . . for man's character has been moulded by his everyday work."

[1] Wallace, Henry A., *Paths to Plenty*, National Home Library Foundation, Washington, D. C., 1938.

There is a small group of economists, represented by Robbins of the University of London, who believe that economics is not directly concerned with welfare at all. According to Robbins, "Economics . . . is concerned with that aspect of behavior which arises from the scarcity of means to achieve given ends." However, "Economics is not concerned with ends as such," and particularly "is *not* concerned with the causes of material welfare as such." In rebuttal, I think it is sufficient to quote from an essay (1924) by Professor J. M. Clark. He said: "Humanity will derive answers to its practical problems from the work of the economists, whether the work of the economists is intended for that purpose or not."

I know that most economists, and agricultural economists, regard the advancement of the public welfare as the ultimate object of their endeavors. But this harmony with respect to ends disappears when we come to means. We do not agree on how we may most effectively contribute to the public welfare.

There are many shades of disagreement, but I think it is possible to divide agricultural economists broadly into three groups. Those in the first group believe that the functions of the economist do not extend beyond the point of expounding and developing theory, compiling and interpreting data, describing existing economic institutions, and appraising action programs. The ideas of this group appear to me to be rooted in either or both of two assumptions. The first is that the economist cannot fulfill his function unless he is completely objective. The attainment of this happy state appears to involve no affiliation with private business enterprises; and although it does permit employment by endowed institutions of repute and the drawing of salaries out of public funds, it looks askance at active participation in the action programs of public agencies. The second assumption is that of the inherent superiority of individual action, guided primarily by the pressure of market price, over any form of economic planning in which government participates. Strangely enough, this postulate is frequently subject to important exceptions. Along with general skepticism about the effectiveness and competence of civil servants in economic affairs, and songs of praise to competition, it is not unusual to find approval of such drastic measures as substantial redistribution of income through progressive income taxes, strong central banking policy, and extensive regulation of industry and commerce in the light of the goals enshrined in the Sherman Anti-Trust Law and

the Clayton Act. In other words, a planned economy is bad *unless* it is a planned *laissez-faire.*

The economists in the second group, which is closely related to the first, are theoretically in favor of a more active participation by the economists in the planning process, but many of them would delay this participation until they have developed a complete frame work of theory, accumulated and analyzed a larger mass of statistics, and have undergone a super-graduate training in schools of social engineering which are yet to be. They do not want to start until they have all the right answers. Although this segment is on the whole more favorable to group action than is the first, they exhibit an underlying distrust of such action. There is a fear that the losses may be greater than the gains; a reluctance to have to resort in any large degree to trial and error; and perhaps a hope that they can construct outside the maelstrom of social forces a system that is universally valid, and when ultimately applied will be virtually certain of success.

The economists of the third group find direct participation in the actual planning process necessary, and frequently welcome. There are of course some divergent opinions on the extent of this participation. Some would engage in the formulation of action programs, but go no further; others are willing to participate actively in the carrying out of plans and to give consideration to non-economic factors, in other words to function as social engineers. The general position of this group has been effectively stated by Wesley Mitchell. He says: "Anyone who attempts to check the practice of national planning will argue in vain. As long as men have power to think, private citizens will go on devising plans for what they find amiss in social organization, and some of their plans will win general approval. Also, as long as we continue to encounter national emergencies from time to time our government will go on adopting hurried measures. The course of wisdom is not to oppose national planning, but to make that planning more intelligent."

If I were to characterize the assumptions underlying the position of this third group, I would say that they include a belief in the persistence of problems which cannot be met by action within the framework of *laissez-faire* economics, the inevitability of irresistible public demands for action on these problems, the belief that technical competence on the part of economists is more necessary than a Jovian detachment from the pressure of events, and a belief

that this competence can be attained only if a substantial number of economists are in direct contact with the knotty problems of their day and generation.

Many of the differences between these three groups arise from over-stressing special points of view rather than from irreconcilable philosophies. Those in the first two groups perform an important service in keeping before their colleagues and the general public the necessity of developing more effective theoretical analyses, improving statistical techniques, expanding research, appraising our plans and programs, and keeping long-run considerations always in view. It is obvious that certain phases of economics are best developed through reflection and research, under conditions removed from the ebb and flow of public opinion, the thrust of pressure groups, and the harassing details of administration. Such work is of high value and entitled to every encouragement. I fear, however, that in their devotion to the more detached phases of our discipline, economists in this field sometimes lose sight of the essential interconnections between theory, research and public policy. I fear that in their quest for certitude and in their dissatisfaction with partial answers, they often underestimte the light which they could throw upon the issues of the day if they would but grapple with them.

Do not misunderstand my position. I am not trying to convert the agricultural economists of this country into administrators. Heaven forbid that all of them should suddenly throw their textbooks and scatter-diagrams into the wastebasket and appear simultaneously in Washington with their shirtsleeves rolled up! I am simply asking for a recognition of the necessary connections between theory, statistics, research, and public policy, and for a recognition of our joint responsibility for the solution of the pressing problems whose existence created the posts which so many of us hold.

II

The issues that I have raised concerning the relation of the agricultural economists to the general welfare, our role in public policy and planning, and the reorientation of our research have long been the concern of many of us. Over a decade ago, H. C. Taylor said: "Research is the modern method of securing the knowledge essential to rational agriculture, both in economic activity and in the

formulation of public policies which determine the metes and bounds of individual action in adjusting the intermingled economic interests of the modern world."

E. G. Nourse handed us a large assignment in 1934 when he said: "If the professional task of the economist is to discover the ways by which the wealth of nations may be increased, he must complement studies of individual efficiency and group interest by the broadest sort of analysis of the manner in which the economic interest of particular individuals, communities, regions, or even the whole agricultural industry fits into the economic structure and ministers to the well-being of society as a whole."

In 1935, John D. Black said we could not expect a "return altogether to the highly individual farm economy of pre-depression days" or an abandonment of "public planning in agriculture," and made the following forecasts with respect to agricultural research: First, "much more data of current developments will be assembled and analyzed than ever before." Second, economic research "will become the basis for action much more than in the past." And third, "economic research will not be so sharply differentiated as in the past. The problems and situations analyzed will call for crossing of the boundary lines between disciplines. . . . But fully as important will be a closer interworking with research in government. A large fraction of the research demanded will be politico-economic in character."

The presidential address of Dr. J. S. Davis, made before the American Statistical Association in 1937, was a plea for the development of schools of social engineering which will turn out "well-trained, specialized professionals who will concentrate on specific means of correcting our economic, political, and social defects. M. L. Wilson followed this up a year ago with a proposal for schools of agricultural social engineering which would "train their students as a new profession, to understand the general framework and the special services of . . . other disciplines."

"The expansion of governmental functions which is taking place in civilization today," he said, "produces a specific demand and necessity for planning and policy-formation as a basis for action and directing action. And it is becoming apparent that much more is asked for in this demand than the science of agricultural economics can give."

In the last issue of this Journal, O. V. Wells furnished us with a

realistic discussion of the relation of the agricultural economists, as a group and as individuals, to agricultural planning. He divided agricultural economists into (1) "academicians"—which include theorists, researchers, and critics—(2) reformers, and (3) administrators He stated that "the work of each . . . is needed in the development of any successful agricultural program," and warned us that "the specialists should realize that their work can rarely do more than contribute toward the partial solution of the complex problems with which American agriculture is currently faced. The administrative economists, in turn, should realize that theirs is essentially a synthesizing and coordinating task, and that both the help of the specialists and a correct understanding of the democratic and continuing nature of the planning process is essential if their work is to bear fruit."

III

Now what does this responsibility signify for research? A little over a month ago, I asked approximately a dozen economists and sociologists engaged in the direction of research within the Department to write down their ideas on the contribution of agricultural economists to the general welfare. Specifically, we endeavored to draw up a balance sheet of the accomplishments and failures of agricultural economics from the standpoint of the general welfare.

On the accomplishment side, we think that the agricultural economists are entitled to particular credit in five fields: (1) the encouragement of efficient production on individual farms; (2) the development of a somewhat more efficient marketing system, especially with respect to the standardization and grading of farm products; (3) the development of a widespread interest in both land use and conservation; (4) the assembling of empirical data and its analysis by quantitative methods, particularly in the fields of crop-estimating and price-analysis; (5) the development of a better public understanding of the basic problems of agriculture, particularly through the analysis of the lack of balance between agriculture and the rest of the economy.

With respect to failures, the most persistent criticism is that the agricultural economists have been too greatly concerned with individual farm production economics to the neglect of wider problems. This shortcoming is particularly emphasized by the sociologists who dwell upon the historic, sociological, psychological, and

cultural factors affecting the total agricultural situation. It is suggested that more attention be given to group welfare as such and to the problems presented by the disadvantaged classes among our agricultural population. We also charge ourselves with failure to devise plans for making economic adjustments in such manner that surplus production can be absorbed without loss to the farmers and to the general public, and with failure to develop methods of analysis adequate to cope with the problems involved in such adjustment.

But we are all agreed that the agricultural economists are not content with their current accomplishments. We must essay new tasks and move in new directions if we would better serve agriculture and the nation. We need to give new thought to the problem of our objectives and our responsibilities.

IV

I turn now to something more concrete, to a consideration of the specific tasks which confront the reorganized Bureau of Agricultural Economics, if it is to function as the chief planning agency of the Department.

I wish first to call your attention to the provisions of the Secretary's memorandum providing for the reorganization of the Bureau.[2]

This memorandum provides that the current work of the Divisions of Statistical and Historical Research, Rural Life and Farm Population, Land Economics, Farm Management and Costs, Agricultural Finance, and Marketing Research shall be continued. In addition to the continuation of its established research, the Bureau is charged also with the integration of the economic research work of the Department, including the formulation of plans and programs relating to land use, farm tenancy, rural rehabilitation; the formulations of plans and programs relating to marketing service and regulatory work; the formulation of plans and programs with respect to adjustment in rates and charges for transportation of farm products; and the formulation of plans and programs in connection with such acts of Congress as the Bankhead-Jones Farm Tenant

[2] *U. S. Department of Agriculture, Memorandum No. 782, October 6, 1938,* and *Memorandum No. 782,* Amendment No. 1, December 5, 1938. The Market News and Regulatory Sections and the Division of Crop and Livestock Estimates are detached from the Bureau and have been included in the Marketing and Regulatory organization which is headed by Dr. A. G. Black.

Act and the Water Facilities Act, the Flood Control Acts, the Soil Conservation and Domestic Allotment Act, the Sugar Act of 1937, and the Agricultural Adjustment Act of 1938.

In order to strengthen further the research work and to provide for a better integration of planning efforts within the Department, the Program Planning Division of the Agricultural Adjustment Administration has been placed in the Bureau of Agricultural Economics, while certain other individuals and units chiefly concerned with planning or planning research also have been transferred to the Bureau.

With respect to these changes, the Secretary has said: "It is imperative that we establish over-all planning work for the whole Department in order to provide for proper functioning of the many new activities authorized in recent years by the Congress. It has become all the more necessary since the Department last July entered into a significant and far-reaching agreement with the Land Grant College Association. Under the agreement the Colleges and the Department are establishing democratic procedures that will give farm people an effective voice in forming, correlating, and localizing public agricultural programs. In the expanded Bureau of Agricultural Economics, the Department is now establishing its part of the machinery needed to integrate State and local planning with general planning and program-forming activities within the Department."[3]

After considerable discussion, we have come to the conclusion that the reorganized Bureau is charged with three essentially different functions or methods of attack:

First, the Bureau is expected to continue its fundamental research. For the most part, this is the field of the divisions which established the reputation of the old Bureau in research and which have contributed so much to the current agricultural programs. This work will go on, although it will of course be necessary to continue to direct a good portion of it more specifically toward immediate planning and operating problems.

Second, the Bureau is expected to collaborate with the federal and state extension services and the State agricultural colleges to the end that farmers themselves will participate in the development of plans and suggestions for agricultural programs. This is a new

[3] *U. S. Department of Agriculture, Press release,* October 6, 1938, Department Organization Changed to Meet New Responsibilities.

function, although it has been foreshadowed by the insistence of the Department on local administration of action programs, especially the agricultural adjustment and conservation programs, and by the County Planning Project which the Extension Service and the Agricultural Adjustment Administration started in 1935. There is a clear need, in a democracy, for direct farmer participation in the planning process, in order that the farmers may understand the work of the researchers, and in order that the researchers and planners may best understand the views and problems of the farmers and work with them in developing a practical program. It goes without saying that this will involve the closest sort of cooperation between the Bureau and the Extension Service of the Department, and the state agricultural colleges. Similarly, we hope for the active participation and cooperation of those who specialize in the biologic and physical sciences. Their knowledge is of course indispensable in planning work.

Third, the Bureau is expected to assume the responsibility for developing, in close cooperation with the colleges and with other bureaus and agencies in the Department, an integrated and continuing national agricultural program. This involves the observation of the several action programs in the field and an honest appraisal of both their shortcomings and their accomplishments; the synthesis of our great mass of research data relating to factors affecting prices, to farm management and desirable patterns of land utilization, and to the normal or current market requirements for each of the several agricultural commodities; and an understanding of what farmers want, of the reasons behind their requests, and of the cost of sacrifices which they are willing to incur in order to reach the desired end.

It should not be inferred that the planning of an agricultural program is as simple as the process just described. You will note that there is nothing in this description that provides for compromising the interests of non-farmer groups such as, for example, organized labor, business, and consumer groups. This process under our form of government must be carried through the State legislatures and the Congress. Moreover, as we gain more experience in conducting planning work through State and local committees of farmers, we shall probably find it advisable to include in the membership of such councils, representatives of non-farmer groups. The process by which the Bureau intends to conduct agri-

cultural planning at present is intended only as a means of working out agreements with the farmers on one hand and agricultural technicians and administrators on the other. This in itself is a large enough task.

Two of these three functions of the Bureau—namely, the encouraging of direct farmer participation in the planning process, and the synthesizing of research results, farmers' suggestions, and administrative experience into the form of agricultural plans and programs—are essentially new functions so far as the Bureau is concerned. As a result, we expect to realign the work within the Program Planning Division as well as within the old Divisions of the Bureau in such a manner as to give special emphasis to State and county planning on the one hand, and to the development of an integrated approach to production, marketing, and land-use adjustment planning and program development on the other.

V

Turning now from the questions relating to functions and organization, we may ask: What are some of the problems to which the research and planning personnel of the Bureau may best devote itself?

A general problem, and one that is related to many of the special problems with which the Bureau will have to deal, has to do with the most desirable distribution of our agricultural production. We have long talked about "comparative advantage" and conducted "studies in methodology," but we need actually to arrive at some conclusions as to *which* trends and shifts in crop acreages or livestock numbers need to be encouraged, and which discouraged.

The Great Plains, for example, and the reorganization of agriculture in the Great Plains, is an ever recurring subject of discussion wherever agricultural economists meet. Yet our researchers are still surveying and asking for more data, and we find that we can only guess at county goals for restoration land under the Agricultural Conservation Program. The range country and the question of overstocking and range conservation is another perennial source of discussion and disagreement among agricultural economists and agricultural workers throughout the West.

The Bureau could well concern itself with an analysis of the need for conservation in the several areas or regions of the Nation. In general, we know that the need for remedial action and changes in farming practices varies greatly from area to area and region to re-

gion. On the other hand, our efforts to obtain conservation are now spread over the entire country without too much regard for the varying intensity of the problem. In what areas should the Soil Conservation Service endeavor to give maximum help to Soil Conservation districts in the form of machinery and technical services, and in what areas should its contribution be chiefly educational? Is the Agricultural Adjustment Administration now making its most effective contribution to the adoption of additional soil-conserving practices, or could the terms of the Agricultural Conservation Program be better arranged?

The Bureau could well devote considerable time to the development of a better reasoned policy with respect to each of the major commodities — corn, livestock, wheat, tobacco and cotton. In many respects, our policies with reference to these and other commodities have simply developed in response to an insistent demand of the farmers and their representatives for such devices as acreage control, crop insurance, marketing quotas, commodity loans, and diversion for relief, new uses, or export. We still need to work out a well-rounded plan or program for each commodity which can be used as a standard against which proposals or schemes actually in operation can be measured.

An appraisal of current trends in technological development in the agricultural field and its effect upon costs, hours of labor, acreage requirements, and the whole problem of agricultural adjustment would be well worth while.

The development of policies and programs for marketing is of increasing importance. We need facts, and plans, and action to improve market facilities and market organization. We need an informed agricultural policy with regard to large processors and distributors. The complex factors in our marketing agreement program deserve more careful review than they have had, to the end that agreements may bring higher incomes for farmers, greater consumption of surpluses, and more efficient marketing methods. This whole question of the distribution of surpluses to low income families deserves intensive study, and if the findings suggest it, a practical program. Lately we have begun to see that interstate trade barriers present a serious problem, demanding action. These are merely a few of the marketing problems for which policies and programs of action have not yet been worked out, but for which they are urgently required.

Meanwhile, the work of the Farm Security Administration in

the field of rural rehabilitation and farm tenancy has opened up an almost entirely new field. So far as most agricultural economists are concerned, there are any number of questions which call not only for research, but also for recommendations for action. Who and where are the under-privileged agricultural classes? How good are they as credit risks? Should they be encouraged to develop small self-sufficing farms, or should they be encouraged to find some other occupation? Should part-time farming be encouraged? How can the status of farm laborers be improved?

Agricultural outlook work requires re-examination, with special reference to the way in which it fits into the general agricultural program. Some of us feel that the annual outlook reports ought to be based upon a more thorough analysis of economic problems and present trends in demand as well as trends in production, and should give indications of probable developments for some time ahead. Should outlook work be correlated more directly with national goals and programs of remedial action? If we are really to have democratic farmer participation in planning, it is essential that farmers have access to the facts, presented fully and completely and without bias. Should interpretations in terms of desirable action be kept separate, as far as possible, from the presentation of facts and conditions? This and many other important questions about outlook work remain to be considered and answered.

Another series of questions can be raised with respect to farmer attitudes and methods of adult education. A good deal of economic research and planning proceeds on assumption of individual and group behavior which may or may not be true. I predict it can be profitable for us to call upon the sociologists, the psychologists, the anthropologists, and the political scientists to put our assumptions under critical scrutiny. We may discover things about farmer attitudes which will compel us to modify some of our notions of human behavior in an economic society. If economists are to cooperate with farmers in the planning process, and if administrators of vast programs are to administer wisely and democratically, it is perfectly obvious that we need to know much more about farmer attitudes than we do now. In the reorganized Bureau of Agricultural Economics we are wondering how farmer opinion can be sampled most effectively, and how the factors which determine farmer attitudes can be discovered.

These, then, are a few of the gravely important questions with

which the reconstituted Bureau of Agricultural Economics in particular and agricultural economists in general may be expected to deal. Indeed, we are asked not only to deal with these questions, but to answer them. I do not know how well we can answer them, but I do know that if we fail to try, somebody else will answer them for us.

Agricultural economists have made valuable contributions to the general welfare, but in frankness let us admit that our contributions thus far have not been commensurate with the need. I suspect we cannot make our fullest contribution to "Agriculture, for the Public Welfare," until we sense the social philosophy basic to contemporary events, until we see the interrelations between agriculture and the general welfare, and until we are willing to share with other social scientists both our perplexities and our proposals for solving them.

DISCUSSION BY H. C. M. CASE

University of Illinois

Dean Ladd's comprehensive historical résumé and appraisal of the contributions which agricultural economics has made to farming leaves place for emphasis rather than the introduction of new thought.

To the conditions confronting agricultural economics mentioned by Dean Ladd, attention might be called especially to the mounting mortgage indebtedness of agriculture, the increased cash cost of farm operation resulting from our mechanized tendencies, the depletion of soil to such an extent that the test of economy needs to be applied to the rebuilding and reclaiming of extensive areas, and with increased attention given to commercial farming, the problems of finding acceptable market outlets.

Farm economic problems are so diverse as to require mention of many different types of activity, most of which have been well presented. Brief mention, however, will be made of certain specific lines of endeavor. In farm management, the more intensive research efforts represented by 35 years of detailed cost investigations, 30 years of farm business surveys, and 20 years of enterprise cost studies, have produced findings which have been welded together to produce principles underlying farm organization and measures of operating efficiency. While many farmers are able to apply these principles directly to their farming operations, farm accounting deserves some added emphasis. The farm financial and production record type of farm accounting is coming more and more to be accepted by farmers as the most satisfactory basis of testing the organization and operation of their farming enterprises and of applying the findings of research to their own operations. In fact, there is reason for presenting farm financial and production records as the vehicle for bridging the gap between scientific research and the practical application of research findings to individual

farms. Furthermore, the records which farmers keep throughout the year under more or less supervision are readily accepted by farmers as a reliable basis for fact finding.

The test of the substantial character and practical use of farm management teaching is revealed in the willingness of many hundreds of farmers throughout several states to pay the cost, wholly or in part, of supervised farm accounts which are used as a basis of farm reorganization. Also when over 500 farmers in a single state have the record of having kept farm accounts for 10 years or longer it is hardly necessary for agricultural economists to attempt to appraise further the real value of farm management research and extension activity as it applies to farming.

In appraising the farm management accomplishments, sight should not be lost of the long distance yet to be traveled in the field of farm practice analysis. The application of basic principles underlying sound farm organization and operation are after all somewhat nebulous and indefinite in the mind of the farm operator, who from day to day must seek to pull together the many different types of information essential to the successful operation of his farm. He must think of higher crop yields, for example, in terms of perhaps 20 or more alternative choices with reference to the practices that enter into the growing and harvesting of any single crop. His observation of the results obtained from a certain practice are too limited to serve as a guide in his farm operations. It is becoming increasingly important that research work include a careful breakdown of farming operations into the individual day-by-day practices which contribute finally to the net results of the entire farm operation.

In the field of farm credit, the frank appraisal of the contributions of agricultural economics reveals many analyses of the farmer's "ability to use credit." The picture of the extent of the use of credit is fairly complete; however, it is probable that too little attention has been given to the approach of the farmer's "ability to pay," and the overlapping of different sources of credit which do not recognize the extent of the farmer's liabilities. The depletion of the soil, the higher fixed costs of land ownership, and the larger proportion of total operating costs made up of cash costs make the problem of the farmer's use of credit one which needs additional study, with special attention to the farmer's ability to accumulate capital. Farm budgeting has been a help in approaching the problem from the standpoint of the farmer's ability to pay. It is probable that during the recent depression years no service rendered to farmer-cooperators was more deeply appreciated than that of budgeting where the budget could be built upon the sound basis of farm accounts.

While little attention was given to farm tenancy and the future problems to develop from it until after the beginning of this century, agricultural economic workers have contributed in a constructive manner to the solution of a problem which is now recognized to be one of major agricultural importance. The painstaking study of the problem has provided a substantial basis for improvement in farm leases especially adapted to state or smaller areas and for educational work designed to develop a better understanding of the problem by local, community, and other agricul-

tural leaders. This sound approach to the tenancy problem, while lacking in glamour, will continue to bear fruit with future generations of farmers.

There is no question but that land appraisal schools, stressing both soils and the economics of valuation, have been potent factors affecting farm loan technique and procedure of many credit agencies in addition to the sound appraisal approach taken by the Farm Credit Administration, where again agricultural economics contributed heavily to methods of procedure.

Land economics and the emphasis upon land use classification with its recognized beginning approximately 20 years ago, was ushered in at an appropriate time. The downward turn in the productivity of much of our land became apparent following the continuous heavy cropping of the World War period, which, together with the reduced prices, the heavier mortgage obligations, and higher taxes and other fixed costs, required closer scrutiny of land prices in relation to the real value of land. In addition, the long-time aspects point to the problems of adequate land rating or classification and the best use of land from the public interest approach.

Agricultural marketing, as emphasized by the agricultural economist, has rapidly carried the farmer's interest in his product beyond the confines of his own farm. Knowledge of the market and demand and supply conditions have led him to give more careful attention to the timely production and more orderly offering of better quality products for sale. The combined study of supply, demand, and price conditions, with reference to the disposal of farm products, have been a potent influence which has given stamina to farmer marketing activity. Farmer marketing cooperatives, for example, have been placed in a much stronger position to bargain for the sale of their products, and to adjust production to market demands. Even to the present time, many members of farmer cooperatives are impatient with their own officers and organization for not accomplishing more marked results in the disposal of their products. However, the orderly handling of the marketing of many farm commodities and the greater cohesiveness of farmer members in attacking their marketing problems shows that much has been accomplished along educational lines, which is beneficial not only to farmers but to the consumers as well. If one were to criticize marketing activities, probably one would say that too much of the effort at marketing research has stopped at the point of the sale of the farm products. Too little is known of consumer demand and consumer thinking, nor have we tackled the problem of consumer education along a broad enough front. The consumer does not yet approach the market with the same assurance in the purchase of food supplies, for example, as he does in the purchase of certain manufactured products.

Farm price analysis is closely associated with both the production and marketing of farm products. Closely allied with the work in agricultural prices, the annual agricultural outlook reports first prepared about 20 years ago have met a real need. Originally designed as an annual report, the development of seasonal outlook reports for specific commodities was the result of demand for this type of work. The interest in this type of work indicated by farmers who attend the meetings devoted purely to

commodity outlook information is perhaps the best measure of the interest of farmers in and the value of this type of work. The outlook work has developed the interest of farm people in securing more information. The interest is now reflected in economic extension schools devoted to the discussion of factors influencing supply and demand, international trade, money, taxation, farm planning, farm tenancy, and other similar subjects. To the farmer's credit it may be said that where information of a highly technical and economic nature has been presented, there has been an expressed demand for continuation and expansion of this type of extension work. Nothing can give a more wholesome outlook for intelligent agricultural leadership and an appreciation of national policies than to find the development of this type of interest which has no more than had its beginning so far as its possibilities are concerned.

The foregoing discussion has dealt mainly with the contributions of agricultural economics to farming in a narrow sense. It is gratifying to note, however, that those who are close to the soil have placed emphasis also upon the broadening of the horizons of farm people so that they not only operate their farms and sell their products more efficiently but understand and can act more intelligently with respect to problems bearing upon agricultural policy. This latter contribution might be construed to be a contribution to either farming or general welfare. It is fair to state, however, that the understanding which farm people are gaining of the effect of national policies upon the economic well-being of all people reflects credit upon work done in the field of agricultural economics.

Statements offered by several county agents include the following:—

"After receiving your letter, I made it a point to talk with some of our men. All of them placed a high value on agricultural economics, and gave considerable credit to it for whatever success they have achieved in conducting their business . . . I am convinced that agricultural economics is a true backbone and cornerstone on which a farmer may develop or adjust his farming operations . . . We cannot hope to raise standards of living without at least reasonable economic security. The contribution of agricultural economics to an individual's farming lies in the fact that it brings that individual face to face with actual economic facts from a reliable source. This enables the individual to more easily and correctly analyze his own situation and derive from the farm a satisfactory living.

A second letter reads:—

"Our farmers who keep farm accounts are the first in the county to adopt new ideas in regard to soil improvement, crops, and livestock feeding. Farm account keeping, with summaries, discussions and meetings that go with it, has brought a liberal education in farming to many a cooperator. Practices are always put to the sound test of whether they pay. Good practices then spread to neighboring farms . . . (Farm management work has added zest and enthusiasm to the farming job for many farmers) . . . (Another effect on the account keeper is his greater efficiency and competence on a board of directors of the Farm Bureau or other farmers' cooperative enterprises. Perhaps it is merely that account keeping gives us a line on the good managers. At any rate, good farm managers as shown by farm accounts, make good directors of cooperatives). . . . Outlook and market information are taking some of the gamble out of farm enterprises, of which cattle feeding is a good example. This has been a hazardous business too often ending in bankruptcy. Now we have a group of feeding students who are able to feed with considerable assurance of success."

A third states that:—

"That farmers who are enrolled in the Farm Bureau Farm Management Service soon take practical, business-like views of their farming business, and are bigger and broader men as a result of the Service. Those who have attended our farm economic schools and have studied money, taxes, tariff, trade relationships, cooperative marketing, and tenant-landlord relationships, have an outlook on the farming business that other men who have not had the same study do not have. The work in farm planning brings each farmer down to practical application of soil improvements, animal husbandry, and business management."

The final letter from a farmer is quite inclusive of different phases of agricultural economics and merits a rather complete quotation.

"Probably the broadest contribution of agricultural economics to actual farming is an understanding of the forces which determine farm prices and the ways in which these forces work. Such forces are quantitative market requirements, both at home and abroad, seasonal variations in requirements, livestock, and grain relationships, industrial relationships, credit and financing, etc.

"These factors in their influence on prices operate in accord with fairly well-established principles, which, having been determined, it is further the province of agricultural economics to disclose through statistical information the probable extent to which these forces will play upon one another and the probable results flowing therefrom. Successful cooperative marketing enterprises have sprung from an understanding of these price-making influences and a desire to take more complete advantage of them or to control them.

"All this, of course, is a very broad application of the subject. More striking results of applying a knowledge of agricultural economics are seen when used by individual farmers. The venture in cooperative keeping of accounts with the accompanying analysis of results and methods has produced important results in this direction. A knowledge of production costs makes possible a wise discrimination in methods. Records which show the profitableness or unprofitableness of an enterprise can be invaluable if taken advantage of. The comparatively simple matter of showing in positive terms the influence of crop yields on income fixes a definite goal with the certainty of definite results. Record keeping has emphasized the importance of doing things well by locating the point of success or failure. The way is sometimes pointed to intelligent experimentation, when, on the alert for new facts an idea is carried through with satisfying results.

"Greater dignity and fascination have come to farming by showing it to be a business which will respond to study and organization and constant effort to improve. After all is said about lack of control over buying and selling prices, there are probably few other occupations where so great an opportunity exists to adopt methods and procedure which will insure some degree of success under all the changing conditions which inevitably come with the passing of the years."

DISCUSSION BY JOHN D. BLACK

Harvard University

The two papers we have heard provoke an interesting question, to wit: How far is science lagging behind practice and performance in the economics part of agriculture?

Of course, economists need offer no apologies for not generally keeping ahead of the operators in agriculture. They are doing it in few fields of economic endeavor. Let me elucidate by an example from the field of public finance. Probably the most important new development in taxation in recent decades has been the gasoline tax. Yet I doubt if it was proposed in

the first instance anywhere by a professor or student of public finance. In fact, some of these went on record against such taxes as late as 1928–30. Presently, however, they were generally accepting such taxes as sound public finance, but strongly opposing a developing tendency to divert part of the income from such taxes to other than highway use. Today a number of them are beginning to realize that gasoline taxes are one of the very best sales taxes that could be chosen. In general, the operators, those who had the job of raising money to run the government, have led all the way. The principal aid the professors have rendered has been in guiding some of the later adoptions.

A little contemplation will convince anyone that, in the great surge toward collective action in the agricultural economy of this and other nations since the World War, the economists generally have been considerably behind the lines of battle—many of them engaged in rear-guard fighting. Not only the drive toward action but also the major part of the thinking about effective lines of action has come from outside the strictly professional ranks—from men like the two Wallaces, George Peek, Chester Davis, Governor Lowden, Alexander Legge, Edward O'Neal, even Rexford Tugwell if you like. This is in spite of the fact that in this particular case an unusual amount of aid has been rendered by several professional agricultural economists—Dr. H. C. Taylor in the days when he served with the elder Wallace, M. L. Wilson, H. R. Tolley, and L. C. Gray; in the field of agricultural credit, W. I. Myers and F. F. Hill. "Cock-eyed" and "screwy" though we economists may dub many of the ideas of some of these men, they have nevertheless set the stage and written many of the parts in the drama of agriculture in the last sixteen years.

No doubt the particular present forms of collective action will be more or less modified in the decades ahead; but that such action will continue in a large measure we can have little doubt. Therefore the new development in the Department of Agriculture described in Mr. Tolley's paper is of great significance. It means that for the first time there has been provided in the federal government an agency setup of the form needed to enable the professional economists there to function as the "general staff," to choose a term from military parlance, and work with the actual operators in the planning and directing of the collective action of the current year and day. Equally as vital, it provides for bringing into collaboration with this staff in Washington a sort of general staff in each of the states, to whose functioning the professional agricultural economists should contribute in large measure. In the state part of this national setup particularly, the foremost men of action and intellectual leadership among the farm operators are expected to join forces with the professional group. If these operators function as in the past, they will furnish the real drive toward action programs.

It is to be hoped, however, that the economists will be able to serve as helmsmen and pilots of the ship of state, or at least as paying cargo, instead, as too often in the past, as mere ballast, or dragging anchors. But we must not be too optimistic about this. Dean Ladd writes in his paper: "The problems of production have been so well solved that great apparent

surpluses of farm products have come into existence . . . . " I would say that if the problems of agricultural production had been solved as economic problems—and they surely are not solved until they are solved economically as well as technologically—these great surpluses would not have come into existence. We could have minor surpluses due to favorable weather, but they would be adjusted for promptly. The circumstance that Dean Ladd, and many others like him, feel that the problems of production economics in agriculture are already "so well solved" is in itself evidence that something is necessary besides mastering the problem.

The truth of the matter is that we still know relatively little, in a scientific sense, about agricultural production dynamics and production adjustments; and concerning the whole theory of collective behavior of farmers as producers. The whole adjustment program of the AAA, in consequence, is reared upon a foundation largely of assumption and hypothesis. Take the producers' response to price as an example: Nothing that has been done on this subject since the publication of the first article on the subject in the JOURNAL OF FARM ECONOMICS in 1924 has given us a way of predicting what supply of any farm product will presently be forthcoming after its price has definitely risen to a level ten per cent higher relative to other prices and producers have reason to believe it is there to stay. And what about a similar *decline* in the level? We are still in the stage of speculation about this problem and most others of its kind.

Dean Ladd speaks of the old law of diminishing returns as having, some years back, been taken off the shelf, dusted and then apparently returned to its cobwebby old hole. Then presently he refers to the problems of rate of feeding and of fertilization, of intensity of cultivation of the individual crop, and of size of farm business, as having been solved to the point of furnishing a basis for "reliable predictions." If this be true, then the operation of the principle of diminishing returns is *now* being quantitatively measured for everyone of these relationships, not as a mere physical input-output relationship, but as an economic determination of the highest profit combination. If this be true, then why are the dairy divisions of ten experiment stations now collaborating with the Bureau of Dairy Industry and the Division of Farm Management and Costs in undertaking for the first time to discover a basis for determining the most profitable rate of feeding of dairy cows? We are no further along with the fertilizer and other problems named.

In the period from 1922 to 1928, while the outlook program of the Department of Agriculture was evolving, a program was envisaged of classifying the agriculture of the nation into areas and then proceeding to a production adjustment analysis for each area, with a local organization in each to help make the analyses and then to help carry out the adjustment recommendations. One had some reason in those days to think that a body of production economics suited to the larger national economy was in the process of making.[1] We did get the type-of-farming area classification

[1] Your reviewer even remembers making a prediction to that effect in a paper read at Cornell before the International Conference of Agricultural Economists.

made, but there the program stalled. For the want of it, and also for some other reasons, we got the Agricultural Adjustment Act of 1933, and much more that has followed.

The program outlined by Mr. Tolley for the New BAE indicates that we are back on the rails again and headed toward the light.

But the lines of action projected in the various adjustment areas will not be the same as would have been designed for 1939 could progress have taken a more normal course. The farmer members of the local groups are not the same. They have much more drive. Their insight has been sharpened by adversity. Also the "sturm und drang" of the last eight years has opened the cracks and weak places in our agricultural economy into wide seams which are plainly to be seen. The county program planning committees and state advisory councils are going to drive after such insuperable things as stable prices and incomes, security of tenure, and conservation of the land.

Distribution will indeed come in for much attention in the discussions of these groups. The agricultural economists will be under pressure here as well as with respect to production. Market planning, as Mr. Tolley has explained, is also a part of the work of the new BAE. I could agree with Dean Ladd that we have more to do here than in the field of production —that is, we are farther in the rear. Contributions to collective action in commodity distribution have been made principally along two lines, first the publicly provided marketing aids and services—grading and standardization, price quoting, market news, etc.; and, second, cooperative marketing. But market planning must come to mean something much more than this: it must include national plans for the utilization and distribution of whole crops, and local plans for economical handling and forwarding of local products. It must conceive and project ways and means of overcoming the weaknesses of our distributive system by reason of which at least a half more persons make a living out of it than are needed.

The problems of distribution are so baffling, says Dean Ladd, "that thousands of people are ill-fed and ill-clothed." Should he not have said, "millions"—perhaps forty millions? But mere distribution, in the sense of *commodity* distribution in which Dean Ladd uses the term, will not go very far toward providing these with food and clothing. We shall need to do something about our economic system as a whole so that it gives increasing efficiency of production a chance to keep on increasing, and the products of it to pass freely into consumption. The economists of this day who would serve agriculture can serve it best in many cases by helping to reconstruct the whole economic system in which it is enmeshed; and all *good* agricultural economists must take some hand in this.

My critical judgments on Mr. Tolley's paper relate mainly to the early parts of it. I wish he had omitted entirely the section attempting to put all economists in three categories. It is a simple principle of the logic of science that a classification should have but one basis at a time. Mr. Tolley's classfication has at least four bases all at once. One of the distinctions is between those economists who take some end, commonly economic welfare, as *given*, and try to concern themselves solely with means

to this end; and those who would undertake to evaluate and choose between different ends. Professor Robbins belongs to this first group, in spite of Mr. Tolley's misinterpretation of him. Professor Ashby in his paper on "Agricultural Economics as Applied Science," read before the Cornell meeting of the International Conference, proclaimed his affiliation with this second group. I find myself disturbed by the evidences of confusion of means and ends that this group commonly produce; and I doubt the ability of a mere economist to evaluate different social objectives.

Another distinction is between the economists who incline toward belief in the efficacy of an economic society with only such competition as we still have left in it, very crudely designated as *laissez-faire* economists in Mr. Tolley's paper; and those who favor planning and control. Now it happens that Professor Robbins belongs in this *laissez-faire* group; but about as many of the *means* economists, of the first dichotomy, are planners as are not. A third distinction is between those who take part freely in public and private affairs, and those who abstain from it. Part of each are clearly found on both sides of the other two fences. A fourth distinction is between the *pure* economists, concerned merely with accounting for things and discovering relationships, and the *applied* economists, who want to set principles at work. This distinction is related to the third, but it is not identical with it.

Surely no good comes from confusing all these distinctions in one classification as is done in Mr. Tolley's paper. Nor was it necessary to resort to this confusion to make the essential point stated at the end of Part I, namely that we must recognize "the necessary connections between theory, statistics, research, and public policy," and "our joint responsibility for the solution of the pressing problems whose existence created the posts which many of us hold."

The usual young public economist who steps into some sort of a public job after two years of courses mainly in the theory of value and distribution, money and credit, prices, production, statistics, and the like, is not likely to make these necessary connections. Only the unusually gifted student bridges readily the gap between theory and application; and the application generally calls for particular knowledge in fields outside of economics. The writing of the usual sort of academic thesis does not go far in this direction. We are endeavoring to meet this training need in the new Harvard Graduate School of Public Administration by conducting seminars in which advanced graduate students, under the guidance of men closely connected with the public service, engage in analysis and research concerning the very problems which are now arising in public affairs.

This does not mean that we are teaching particular applications of principles, or working out particular solutions for particular types of problems, and then giving drill exercises in doing them. We are developing no rituals, no creeds, no formulas, no manuals of instruction. The story is still pertinent of the two brothers, one of whom graduated from Iowa State College and twenty years later was found running the home farm in all its details exactly as they had told him to do it in college twenty years

before; and the other of whom worked as a hired man on several good farms, then became a tenant and finally an owner, and twenty years after leaving home had become one of the most progressive farmers in his county.

This story is even more apt for economic training than for husbandry training, because economic factors shift more freely. Dean Ladd has spoken of the successive waves that have flooded our agricultural economic teaching and research—farm business surveys, complete cost accounts, single enterprise accounts, farm budgets, etc. Think of the unfortunate fate of a young student taught one particular way of solving the economic problems of farming at the crest of one of these waves.

Of course I do not consider the Dean's choice of figure of speech as fortuitous. Progress is not made by a succession of waves that rise and then flatten themselves out on the beach-sands of civilization. Instead the succeeding periods or movements commonly add something to a foundation upon which is gradually reared a firmer and more imposing structure of understanding. Some of the movements, in spite of great enterprise at the time, add only fragments here and there; others contribute everlasting block upon block. Modern economics retains very little of the particular balance of trade theory of the Mercantilists and of the Physiocratic theory of production; but, although Adam Smith, Malthus, Spencer and Conte are now outmoded; what would the structure of social science be today without the blocks from their quarries?

EFFECTS OF THE AAA PROGRAM UPON REGIONAL SPECIALIZATION IN AGRICULTURE

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The task assigned to this paper is that of appraising the effects of the AAA program upon regional shifts and regional specialization in agricultural production. Does it influence, and if so in what way, the ability to maintain an adjustment among regions, which will reasonably approximate the most advantageous adaptation to conditions as they are?

Since adjustments resulting from the program come about through decisions by individual farmers, a logical starting point for an examination of these effects would be the individual farm. Through such an approach one might build up a complete analysis of AAA accomplishments in influencing acreages and production, including its regional effects. However, no such comprehensive treatment is possible on the basis of the information to be had at the present time. Neither is it possible within the time allotted to this discussion to give any adequate attention to the considerable volume of pertinent, though scattered and oftentimes fragmentary, material which is available.

In view of these difficulties, I shall make no attempt to examine, or even mention, all of the effects upon inter-regional adjustments which may be attributable to the program as a whole. Instead, I shall try to obtain a realistic view of the problems involved by illustrating them in terms of developments which represent three important specific aspects of the over-all topic. These are: (1) effects upon feed and livestock production in the cornbelt and in the South; (2) influences upon regional changes in cotton acreage; and (3) a somewhat similar consideration of effects upon wheat acreage and production. Although it will be possible to present only the briefest summary of significant developments in each case, collectively these may illustrate the kinds of influence involved and to this extent yield a basis for interpreting the experience which has been obtained.

Feed and Livestock Production in the Cornbelt and in the South

Few questions pertaining to the effects of the adjustment and conservation programs are more controversial or more difficult to

evaluate than is that of the influence upon production of feeds and livestock.[1] For present purposes I shall consider only the adjustments attributable to the operation of the AAA program in the cornbelt and in the South.

In order to evaluate these adjustments it is necessary to appraise for each region: (1) the extent to which land is actually diverted from the production of soil-depleting crops; (2) the extent to which such land is used for the production of forage crops; (3) the net effect upon kind and volume of feeds produced; and (4) the manner in which farmers respond to the changed situation with respect to grain and forage supplies in relation to livestock prices, and to their need for increased volume of business following the curtailment of principal crop enterprises.

The first of these raises the whole problem of determining what the AAA has accomplished in relation to one of its principal goals. Provisions of the successive annual programs have been designed to encourage the removal of substantial acreages of land in both regions from the production of basic and soil-depleting crops. But information on actual accomplishments is lacking, and the situation is confused and obscured by the effects of extreme droughts. It seems most reasonable to conclude that the program has effectively restricted the acreages of cotton in each year of its operation, although this restriction was less drastic in 1936 and 1937 than in other years.

While the curtailment of corn acreage has been small, as compared with cotton, it also appears to have been significant during the early commodity adjustment phase of the program—particularly in the first year. Likewise, participants in the soil conservation program have withheld considerable acreages of land from corn production during the past three seasons. Moreover, throughout the five years of operation the percentage of participation, and of acreage curtailment, has been generally higher for farmers in the cornbelt than for corn producers located outside that area. But in part these reductions have been offset by persistent increases on farms of non-participants, and the net accomplishments of the program in diverting land out of corn production have been much

[1] For earlier discussion of this topic, see A. F. Vass and O. V. Wells, "Livestock Adjustments," *Journal of Farm Economics*, May, 1937. For other discussions, see papers by A. G. Black, H. C. M. Case, and O. B. Jesness, in *American Cooperation 1936*. See also F. F. Elliott's paper before the 1938 convention of the Association of Land Grant Colleges.

smaller than those which were sought, or paid for. Their influence upon corn production—and hence upon feed supplies—in the cornbelt has been very small indeed as compared to that attributable to drought.

With respect to points (2) and (3) relating to the uses of diverted land and the consequent effects upon feed supplies, it is difficult to see where any very significant regional effects have developed thus far in the cornbelt. Under the original commodity adjustment programs the use of land taken out of the production of basic crops was restricted. Although these restrictions were removed in drought-stricken areas in the effort to mitigate extreme shortages of feed, the effects of this were nullified by the same conditions which brought about the change in procedure. Under the soil conservation program, seedings of legumes and other grasses have been greatly stimulated, but weather conditions have caused the almost complete failure of these crops over large areas.

In the South it appears that the AAA has helped to bring about an increase in soil-conserving crops, and hence in the production of feed. As a matter of fact the trend in this direction really began as early as 1927 and was accelerated in 1931 and succeeding years, but the sharp increase in 1936 and 1937 indicates a significant influence attributable to the program. However, 85 per cent of the crops harvested in the South during the period 1933–37 were soil-depleting. Hence, although the trend has been towards soil-conserving crops, it does not appear to have gone far enough to furnish the basis for any very material expansion of livestock production in the region. Particularly, it does not seem likely to have much commercial importance when we take into account the probability of a reduction in the quantity of livestock feed shipped into the South and the possibility of increased consumption on the farm.

The magnitude of my assignment precludes any possibility of discussing the various important aspects of the problem of determining farmer responses to conditions which may be created by the program. To me this represents one of the very important topics on which a great deal of further work is needed. Evidence directly applicable to the problem of determining what this response may be in the cornbelt is supplied by Professor Wilcox's study for Iowa[2] and is available from the work of other stations, particularly from

[2] Walter W. Wilcox, "Livestock Production in Iowa as Related to Hay and Pasture," *Iowa Agr. Exp. Sta. Bul. 361.*

studies by the Division of Farm Management of the Bureau of Agricultural Economics which are as yet unpublished. But taken as a whole this evidence is subject to varied interpretations and does not yield a basis for a conclusive answer to the question of what responses will actually develop. With these reservations, let me state the tentative view which I reach through the examination of these studies and such other pertinent material as I have found. In brief this is as follows:

It is probable that any increases in forage production on land taken out of grain will affect the livestock industry in the cornbelt much less than is ordinarily assumed. Such a change is likely to involve little if any increase in total feed supplies, and the tendency to shift from grain- to forage-consuming animals will be greatly lessened by the ability to substitute forage for grain in present rations. However, the character of the actual response may vary considerably among different areas and individual farms. For example, the program as now constituted strengthens the incentive for many farmers to establish increased acreages of alfalfa. Where this is done a larger volume of higher quality feed will be available, and the incentive to expand dairying should be correspondingly stronger.

While it is easy to exaggerate the magnitude of the changes in livestock production which might result in the cornbelt, particularly within a few years, nevertheless it seems to me that over a long period of time the influence of a program which brought about a sustained shift from grain to forage crops would be in the direction of gradual but fairly permanent changes in the livestock industry—that is, a somewhat greater expansion of dairying than would otherwise take place and a significant shift from grain-consuming to forage-consuming animals. The conclusion that a small response is to be anticipated in the short-run or intermediate period is attributable in part to factors on individual farms which are more influential than the cropping system. But these are not always of indefinite duration and hence may not be so important over the longer period. Moreover, at least some of the forces tending toward readjustment probably are cumulative in character, and as time passed their pressure upon the farming system would increase.

A somewhat similar conclusion is reached with respect to the expansion of livestock production in the South. Changes thus far are not very important and those which result from a continuation of present trends will occur only slowly. In view of all the conditions

in the South, there seems to be little economic opportunity to effect any general substitution of livestock production for the principal cash crop. Hence there appears to be slight probability that expansion in the cottonbelt will be sufficient to materially affect prices of livestock products in other regions. However, conditions would seem to favor an increased production for home use and in some areas as a supplemental source of cash income. Under the present program, the incentives to make such shifts are definitely increased.

Effects upon Regional Shifts in Cotton Acreage

For a number of years prior to the inauguration of the first AAA program, pronounced shifts in cotton acreage had been under way. In part these appeared as adjustments between regions and in part as shifts among areas even within the same state. In general they represented adjustments to conditions created by the boll-weevil and to opportunities for lower-cost production on new lands in the western part of the cottonbelt. The second situation which I have selected as illustrating important features of our general problem, relates to the effects of the adjustment and conservation program upon these shifts.

Under all of the programs the benefits available to the individual participant have depended in large part upon the size of his base in relation to his current scale of operation. Especially during the commodity adjustment phase, but to a considerable extent throughout the period from 1933 through 1937, the procedure followed in distributing bases tended to favor those who were in the process of curtailing their scale of operations. In other words, the benefits to be obtained by participating in the program were relatively greater for producers who were contracting than for those who were expanding their acreage. Had the average net benefits to producers been small, it seems probable that this would have resulted in a selective participation—high in the areas of currently declining acreage and low in the expanding regions—a conclusion which seems to be borne out by the experience with other phases of the program. This would have tended to accelerate the shifts already under way, but would have made the program less effective in curtailing acreage and production.

Actually no such influence appeared since other considerations offset this tendency arising out of the basing procedure. The bene-

fits offered by the early programs were so large that participation was high in all areas and this situation was consolidated by the imposition of a compulsory control under the Bankhead Act. Moreover, producers in the West where hired labor is used seasonally have been able to adjust labor costs in line with their acreage of cotton, thereby obtaining an advantage over eastern operators using croppers or tenants whom they were expected to retain. Finally, the terms of the early cotton loans appear to have been slightly more favorable to the western areas.

As a result of all these considerations which collectively brought about a generally high rate of participation by cotton growers,the program tended to hold cotton acreages in all areas substantially in line with their historical relationships. In fact the actual curtailment below what would have been produced in the absence of the program probably was greater in the areas of expanding production than in other localities—due of course to the use of historical bases. To this extent the program of 1933–35 did operate to "freeze" production and therefore temporarily interfered with inter-area adjustments which were under way.

Developments under the soil conservation program of 1936 and 1937 were of a somewhat different character. This program also appears to have offered different relative advantages to producers in the various regions where conditions differed significantly. For the most part these have been similar to the variations observed in the earlier phase—for example, the greater advantage to producers who use hired labor and therefore, by reducing their labor force, can more readily adjust their costs to different scales of operation brought about through acreage diversion. To a minor degree they may have been attributable to new factors, such as differences in the ability to adopt approved practices. Moreover, although the historical base was retained in these years, bases were extensively adjusted and modified. The conservation program tended to modify the relative advantage of different areas, but the pattern of these effects was somewhat different than it had been under the former program.

Of greater importance is the fact that the procedures employed under the Soil Conservation Act were inherently more flexible. Likewise they were less restrictive and therefore less effective in curtailing cotton acreage. Under these less stringent measures cotton acreages in the Delta and low-cost western areas increased

significantly in relation to those in the eastern cottonbelt during 1936 and 1937. Hence, it seems clear that not only was the pattern of influences upon area adjustments in these years different from what it had been in 1933–35, but that the actual interference with inter-area adjustments was less important. To the extent that it was present at all, it was attributable to differences in conditions affecting the ability to qualify for benefits, rather than to any effects from rigid control.

New legislation enacted in 1938 completely altered the previous situation with respect to cotton bases by creating a new set of problems. In general this legislation has not avoided the disadvantages which have been attributed to the earlier procedure. On the contrary, it may have increased them at the same time that it re-imposed a drastic type of control through provisions for marketing quotas. Initially, these difficulties arose from the designation of a highly inflexible procedure for distributing allotments and the inclusion of special provisions applicable to small and intermediate farms. Under these provisions, so much of the national allotment had to be assigned to small operators that the remainder was insufficient for those with larger farms. As a consequence some producers who formerly had satisfactory bases now found themselves with allotments completely out of line with their established cropping systems, and to some extent these tended to be grouped in distinguishable areas. Although producer objections led to immediate modifications of the procedure first prescribed, this particular problem probably will require much further attention for its satisfactory solution.

For the whole period of operation it does not appear that the AAA has been responsible for any large, sustained influence upon inter-regional shifts in cotton production. Instead, the effects have been temporary and sometimes conflicting. But the situation which has been reviewed should illustrate the nature of the effects which may be expected to develop under a rigid compulsory type of control.

Effects upon Wheat Acreage and Production

The final situation which I have selected as illustrating influences which must be taken into account in any attempt to evaluate the regional effects of programs such as have been developed by the AAA relates to wheat.

The AAA program has been popular in the wheat-producing areas. Broadly speaking, it is in these areas that participation has been highest, dissatisfaction has been least, and immediate benefits have been greatest for the largest percentage of the people. At the same time the program appears to have brought about a smaller adjustment of production in these areas than in any other.

In large part this last has been true because of conditions created by the drought. But in part also it may be attributed to the provisions of the program as it has applied to wheat. In this respect, of course, wheat has stood at the opposite extreme from cotton with its large rate of reduction and substantially compulsory control—at first under the Bankhead Act, now under the marketing quota provisions of the 1938 legislation.

As one studies the data on wheat acreage and production over the period of AAA operation, a number of apparent shifts and tendencies are noted. Some of these indicate apparent readjustments between areas within individual states, others show up in a comparison of state data as tendencies operating over much wider areas. For the most part the detailed examination of these movements leads to the conclusion that one way or another they are associated with conditions created by drought from 1933 onward. In fact, the attempt to analyze virtually any aspect of the program as it relates to wheat soon encounters complications attributable to this factor.

One movement which appears to have significance in relation to our present problem is the pronounced tendency for wheat acreage to expand outside the Great Plains and Pacific Northwest. This is particularly striking in the case of the cornbelt. From a low point in 1932 wheat acreage in the cornbelt states increased gradually through 1936, and in 1937 this rate of increase was greatly accelerated. Over the same period acreage in the Great Plains and Pacific Northwest has not shown a corresponding increase.

In large part of course this shift also has been in response to drought influences. Low yields and widespread crop failure brought about a sharp curtailment of wheat supplies and created a price situation which favored considerable expansion in areas less subject to weather hazards. But the program may have had the effect, at least at times, of strengthening this tendency which has persisted throughout the period of adjustment and conservation effort.

At first the influence appeared as a response to the prospects for reduction by those who participated in the program. From the

outset a tendency for expansion by non-participants to offset the reductions by contract signers—or more correctly for the program to attract those who were planning curtailment and repel those who were in a position to expand—was apparent. Since participation was higher in the principal areas of commercial production than elsewhere, the apparent correspondence with the eastward shift was striking. With respect to these developments in the first year of wheat adjustment, and after allowing for other influences, Dr. Davis concluded that, "West of the Mississippi, the program seems to have had little influence on increasing the acreage planted . . . by non-signers. East of the Mississippi, however, possibly as much as half of the increase in acreage and production of non-signers represented response to prospects for reduction by contract signers."[3] Hence, most of the increase which occurred for the cornbelt as a whole cannot properly be attributed to the program. Developments in 1935 indicated the continuation of somewhat similar tendencies.

This expansion of cornbelt wheat acreage in 1934 and 1935 was probably brought about almost entirely by those producers who did not participate in any part of the program, since the commodity contracts generally prohibited expansion for any basic commodity. But as they applied to wheat, these provisions of the corn-hog contracts were never very restrictive and it is possible that in some instances wheat acreage was increased by participants in the corn-hog program.

Provisions of the soil conservation program have been much more flexible from the standpoint of the participating farmer, particularly since special bases or allotments were not set up for wheat. Hence he has had considerably more latitude as to the manner in which he will effect a diversion of corn acreage and in the determination of his current combination of crops. Although I am not able to speak with assurance on this point, it appears to me that the provisions of the program—especially the inclusion of wheat in the general soil-depleting base—have been favorable to an expansion of wheat acreage by some participants in the cornbelt. To this explanation I am inclined to attribute a small part of the expansion which occurred in 1937, at least until more information is available as to the exact nature of the responses which have taken place.

[3] J. S. Davis, *Wheat and the AAA*, p. 352.

On the whole, it seems most reasonable to conclude that with wheat—as with corn—one effect of the program has been to stimulate expansion of acreage outside the principal areas of specialized commercial production. Estimating the amount of expansion attributable to this cause is virtually impossible in view of the nature of the other factors involved, but it probably does not constitute a large fraction of that which has taken place.

One other aspect of the program's influence upon developments in the wheat regions should be noted. This relates to its effects in subsidizing continued farming on land which otherwise would be removed from cultivation.

In large areas the program has assured some returns to participating farmers during a period when crop failure was common and income from other sources was particularly low. Studies by the Department of Agriculture indicate that in some of these areas, for example southwestern Kansas, payments under the program provided the major source of income during the dry years from 1933 to 1937. Over this period there has been an exodus of farmers from sections most affected by drought. But although the number of farms has decreased the land has been retained in cultivation by those remaining. The data available indicate that in an unknown number of instances the benefits from the program have enabled wheat farmers to remain on their land whereas otherwise they would have been forced out. Such farmers have not only maintained, but in some instances have significantly increased, their scale of operations.

In the early years benefit payments enabled farmers to care for land which would otherwise have been abandoned and later they paid for practices needed to meet specific emergencies. But in doing this they likewise effectively subsidized the retention in cultivation of land which, from a long-time standpoint, probably is not suited to crop production.

Importance of the Over-all Problem

Detailed study of the program and its operation in the various agricultural regions reveals indications of other influences comparable to those which have been described. Obviously, my discussion of selected situations has not presented evidence from which conclusions may be drawn with respect to all of these. On the contrary, it has not even given a complete evaluation of developments in the

areas specifically considered. But I am unable to find real evidence of regional effects that are more important than those which have been mentioned, or that are greatly different in character. Hence, I am led to hope that the developments described may have furnished realistic illustrations of the more important effects to be recognized. In conclusion a few points with respect to the importance of this general topic may be stated tentatively.

In my own observation and study of the adjustment and conservation program I have found that it is easy to obtain an exaggerated view of the importance to be attached to some of its effects upon regional specialization, or to misinterpret the nature of their actual importance. This has been particularly evident in many of the criticisms which have been directed at the program on the grounds that it imposed a rigid control of acreage and seriously interfered with desirable regional adjustments.

In this connection, the historical base with its inherent tendency to "freeze" acreages and thereby check shifts which might otherwise occur became an early object of attack by critics and has presented a continuous problem to administrators. That the base-making procedure employed in a control program has an important bearing on this problem and deserves continuous attention, there can be little question. But its actual effects are materially influenced by the conditions under which it is applied and these are likely to be assumed in any projective analysis.

Application of a drastic control program requiring substantially flat cuts from an inflexible historical base would result in a significant interference with regional adjustments. This is not only logically clear, but is revealed by an examination of developments under the early cotton program. To a lesser extent other commodity programs gave rise to similar influences. But the actual total effects have not been large. Even in the most extreme cases the influences were of short duration because of frequent modification in the program. Moreover, these were reduced, or at least brought under a measure of administrative control, through the process of adjusting bases to correct inequitable or undesirable situations. Under the present procedure of distributing allotments, in which the historical base and current trends have roughly equal weight, any tendency towards an undesirable "freezing" of production appears to have been still further reduced.

Except where compulsory controls have been applied, the effects

upon regional adjustments are likely to be determined by the size and distribution of the benefits. So long as the program is voluntary, each producer decides to participate or not, depending upon his estimate of the benefits to be obtained. If these conditions are such that it is already advantageous for him to make the adjustments called for, very small direct benefits may secure his participation and cause him to make a greater change than he would otherwise have undertaken. But if compliance involves an actual sacrifice, this fact is balanced against the benefits to be obtained. In those instances where average net benefits are small, fairly slight differences in conditions among localities result in a selective participation and a minimum influence upon inter-area adjustments. But if the benefits are large this influence may be much greater, just as it would be under a compulsory type of control. Therefore the actual effects upon regional specialization depend upon both the goals which are set and the effectiveness of the procedures which are employed for the attainment of those goals.

Actually, of course, the problem resolves itself to this. A program of the type which has been developed offers the individual farmer an alternative source of income in addition to those which he has. Because of variations in conditions this may be so unimportant to many producers that they do not participate. At the same time it may be very important to others who have a more limited number of alternatives, as in the cases of many cotton growers, and wheat producers in the dry farming regions. As has been noted, the new source of income may be of sufficient importance to keep farmers on land which otherwise would be retired from cultivation. Hence, by offering a new alternative which is not uniformly attractive to farmers in all areas the program effectively modifies comparative economic advantage among these areas. The effects upon regional specialization and shifts depend, therefore, upon (1) the character of this change, and (2) farmers' responses to the new situation.

In closing I urge a caution against assuming the effectiveness or continuation of any program which operates to create serious maladjustments among regions. A program, if it is voluntary, tends to obtain a selective participation and this appears as a low rate of participation in some areas. Both logic and experience indicate that such situations tend to bring about modifications in the program itself. Even in the case of the most drastic controls so far developed

—the Bankhead and Kerr-Smith Acts and their direct descendant, the marketing quota—such situations develop criticisms and pressures which cause the provisions to be changed.

On the whole, although the program may exert numerous and diverse influences upon regional specialization in agriculture, for the most part these have not been, and will not be, so important as would be indicated by the place which they have been given in discussion of the AAA. The problem will continue to be important, particularly to those who frame the provisions of the program, because area and regional conflicts lead to dissatisfaction, low rates of participation, and ineffectiveness of the whole undertaking. But I see little probability of serious maladjustments arising out of adjustment features which are likely to be applied, although this could easily be the result of inflexible and drastic control. In practice the most important actual effects may be those which result from what are essentially subsidy features.

DISCUSSION BY W. W. WILCOX

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Mr. Rowe concludes that the program is having but a limited effect on regional specialization in feed and livestock production. In fact the Corn Belt program may largely result in the substitution of non-depleting crops for the restricted depleting crops in the livestock rations. The tendency toward a change in either the quantity or kind of livestock may be slight and slow in realization. In the South the use of the diverted acreage from cotton production for home feed and food crops and the unfavorable factors such as lack of equipment, experience and ability to control animal diseases is preventing any appreciable shift toward the commercial production of feed and livestock.

With respect to cotton production, he finds that the first years of the program had the effect of stopping inter-area trends in progress. More recently the conservation program has been sufficiently flexible to permit further concentration of cotton growing in the low cost areas. The effects of the 1938 Agricultural Adjustment Act depend on how the present inflexible base setting procedure is modified.

The case for wheat appears to be different. Here the program has definitely led to a reduction of wheat in the wheat areas and an increase in other sections of the United States. It has also kept submarginal wheat land in production.

In summarizing the overall picture he finds that thus far there is little ground for a case against the AAA because of its undesirable economic effects in preventing regional specialization in agriculture. He concludes that the dangers of this happening in the future are rather remote because

(1) now the allocation of bases is roughly half on history and half on current trends, (2) participation is voluntary and will lead to the heaviest reduction in areas where comparative advantage of the crop is least, (3) programs tend to be adjusted to fit present farming more than farming is adjusted to fit the program. He then closes his discussion with a tantalizing sentence suggesting that the most important effects may be those which arise from essentially subsidy features.

Mr. Rowe didn't intend, I am sure, to pay such a left-handed compliment to the AAA as his paper really does—summed up in a few words—when it was most effective in accomplishing adjustments it reversed regional specialization—more recently the program has not been so harmful from this point of view—in fact it has accomplished little adjustment good or bad and the future is likely to resemble the recent past.

I am not inclined to take issue with these conclusions. Rather it has started me to speculate. Why after five years of operations of AAA programs was it necessary for Mr. Rowe to prepare a paper showing negative results in the problem of regional specialization in agriculture? With a few exceptions, including the author of the paper, the leading agricultural economists from the state colleges and the Bureau have joined the AAA. The programs have been the product of this group of agricultural economists with as few concessions as possible to the common man.

Recently our administrator was an experienced economist, and from the first the administrator has had a number of trained and experienced economists as assistants. We also, had men with outstanding professional ability as our Secretary and Under-Secretary of Agriculture to counsel with and to carry forward worthwhile ideas to both the President and Congress. Not only were we fortunate in having such unusual leadership, the few outstanding economists who were somehow overlooked in filling the AAA posts have shown themselves to be most willing to furnish advice and criticism gratis.

When I review this unbeatable record for leadership, when I review the tremendous energy expended on land use planning in other branches of the federal government, and when I reflect on how planning, yes, planning for a more abundant life has been emphasized throughout these years, I am somewhat discouraged.

If the best that we can say of recent programs is that they haven't done much damage in the way of influencing uneconomical production adjustments under such a leadership, how can we be as unconcerned as Mr. Rowe is about the future? Perhaps we are justified in patting ourselves on the back for being able to pay out $500,000,000 a year for agricultural adjustments without any important uneconomic results. But at least some of us had been led to expect positive accomplishments.

As a graduate student in 1932–33 when the passage of the original AAA was assured I would have been willing to accept an assignment for a paper due in six years entitled "Economic Adjustments in Agricultural Production Brought about by the AAA." What has happened to those old ideas of the presence of maladjustments in particular areas and on individual farms? It was my impression that we were going to spell out rather care-

fully the nature and extent of these maladjustments and design action programs to correct them.

Yet today after six years of program operation Mr. Rowe in a paper specifically devoted to the effect of the AAA on regional specialization did not mention what the goals of the program in this direction were or should be. He was content merely to point out that thus far the effects on regional specialization have been slight with little if any change expected.

I find myself wanting to analyze the situation to find out just why he was led to write such a paper as you have just heard. Where does the trouble lie? Is it that we in agricultural economics don't know what is economical or uneconomical in the way of regional specialization? Don't we know what from an economic point of view would be desirable production adjustment in the various areas? Or is it that we can't devise an action program to bring about the adjustments wanted? Specifically to what extent are our results and lack of results to date due to (1) lack of information in the field of agricultural economics, (2) lack of experience with, and information on, how to obtain desired results through group action, or (3) insurmountable obstacles inherent in our democratic form of government. Perhaps it is a combination of all three of these reasons. At any rate now that we have a permanent act it would seem rather logical to inquire in what direction should we go, area by area, how far should we go, and by what vehicles are we likely to be able to accomplish such adjustments? To me this job, with respect to cotton and wheat, yes, in fact for each of the commodities, appears still to lie in the future.

EFFECT OF THE AAA ON FARM ORGANIZATION AND OPERATION

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The objective of the 1934 corn-hog program was to reduce the supply of corn and hogs and that it achieved this purpose is indicated by the fact that the United States' planted acreage of corn was 10 per cent less in 1934 than for the average of the years 1932 and 1933, while 24 per cent less sows farrowed in the spring of 1934 than for the average of the two preceding springs.

In the South the cotton program has stressed reduction of production and as a result the average acreage harvested declined 28 per cent, and production 13 per cent from the period 1928–1932 to 1933–1938. On the other hand, the reduction aspect of the wheat program failed to function (at least prior to seedings for harvest in 1939) if judged by the acreage seeded to wheat in the United States. The United States' acreage of all wheat seeded for harvest in the period 1934–1938 averaged 10 per cent larger than for the period 1929–1933. That the production from 1934 to 1938 averaged 9 per cent less than from 1929 to 1933 was due to lower yields.

In the Corn Belt the major objective of the program has varied from year to year, fluctuating from that of reduction in 1934 to conservation in 1937 and back to a mixed objective for the program of 1938. The program of 1938 for the Corn Belt had two objectives: (1) to raise prices of agricultural products by reducing the acreage of corn and other grain crops, and (2) to encourage soil conservation practices. This duality of purpose contributes to the difficulty of administration, and leads to many erroneous conclusions concerning the contributions of the program to increased farm incomes. Since the objectives of reduction and conservation may be achieved, in part at least, by changes in the acreage of important crops, let us examine the changes which have taken place in Illinois since 1931. This analysis, however, will be complicated because aside from the AAA program there were several important factors operating during this period to cause changes in crop acreage. Among these important factors should be listed drouth, changes in the prices of farm products, and normal trends in crop acreages.

Illinois farmers cooperated in the reduction program of 1934 by reducing the planted acreage of corn 1.7 million acres or 17.8 per

cent from the average of the years 1931–1933. It increased each year, however, from 1934 to 1937, but declined slightly again in 1938, when it was but 1.8 million acres larger than the quota established by the 1938 program. On the other hand, the wheat acreage increased from 1933 to 1937, during a part of this time many wheat contracts were in force in the important wheat producing counties of Illinois.[1] The average acreage seeded to oats and barley from 1934 to 1938 was 17.6 per cent less than from 1931 to 1933. The acreage of hay harvested in Illinois has averaged 13.7 per cent greater since 1934, than for the three years 1931 to 1933. Following the drouth years of 1934 and 1936 when clover seedings were scarce, the harvested acreage of hay was maintained largely by the use of soybeans and cowpeas. The acreage of soybeans in Illinois has been increasing very rapidly for the past 15 years. The program was probably responsible for some increase in acreage in some years while in other years it had a retarding influence. Soybeans have displaced both corn and oats; therefore a part of the decline already noted in the acreage of these crops was caused by the increase in soybean acreage rather than to the program.

Changes in the acreage of corn were roughly correlated with the variations in the percentage of Illinois farmers participating in the program. The percentage of Illinois farms participating in the AAA program from 1934 to 1938 was as follows: 1934, 62 per cent; 1935, 49.4 per cent; 1936, 43.3 per cent; 1937, 38.2 per cent. The estimates as to participation in 1938 range from 40 to 50 per cent.

That the effects of the program have not been the same in all areas of the state is indicated by the farm financial records. Each year the percentage of farm account keepers who received government payments has been less in Area 1 (the Chicago dairy area) than in any other areas. This is because the percentage of tillable land in corn is smaller in this area, a large percentage of the corn is put in the silo, and on many farms more grain is fed than can be produced. Except for the three southern areas,[2] the precentage receiving payments declined each year after 1934. In the three southern areas the trend has been downward, although at a less rapid rate than in other parts of the state. The percentage cooperat-

[1] The effect of the program on acreage control has been minimized by the drouths of 1934 and 1936 and by the fact that the AAA program was declared illegal in 1936.

[2] *Farming-type areas:* 1. Chicago, dairy area; 2. Northwestern, mixed livestock; 3. Western, livestock; 4. East Central, cash grain; 5. West Central, general farming; 6. St. Louis, dairy area; 7. South Central, mixed farming; 8. Wabash Valley area.

ing in Area 3 declined 28 per cent from 1934 to 1937, while the decline in areas 7 and 8 was only 10 per cent. The percentage cooperating in Areas 6, 7 and 8 in 1937 was higher than in other sections of the state. The program in 1934 apparently favored high participation in those sections of the state having the best land, while the 1937 program favored participation in those sections of the state having the poorest land. This variation in participation naturally raises a question as to the cause.

A recent study made in Iowa by Wilcox and Matteson[3] indicates that the participation in the 1938 program depended largely on how much reduction in corn acreage, from that planted in recent years, farmers had to make to comply with their allotments. The following data indicate that the Illinois account keepers also reacted to the profit motive. In 1934 and 1935 about 90 per cent of the account-keeping farms received payments, and the payment per farm receiving payments averaged $278 and $386 respectively. Only 69 per cent received payments in 1937 and the payment per farm receiving payments was $233. The smaller decline in participation from 1934 to 1937 in Areas 6, 7 and 8 may have been because there was less decline in the payment per farm. The payment per farm in Area 3 in 1937 was 26.9 per cent less than the 1934 payment, as contrasted with a decline of only 6.4 per cent for Area 6, and .5 per cent for Areas 7 and 8.

In 1935, the year of the largest government payments, the payments constituted 8.2 per cent of the total cash farm income for Illinois accounting farms; ranging from 4.6 per cent in Area 1 to 10.7 per cent in Area 5. As the result of declining payments and an increase in farm income from other sources, only 3.1 per cent of the average cash income was from benefit payments in 1937; ranging from 1.5 per cent in Area 1 to 4.2 per cent in Areas 7 and 8.

The effect of farm prices on participation must not be overlooked. The Illinois farm price of corn was 42 cents per bushel in March, 1934, as contrasted with $1.06 a bushel on March 15, 1937. It is not surprising that fewer farmers cooperated in a reduction program when the price of corn was over a dollar a bushel. We should remember also that Illinois cash farm incomes increased each year from 1932 to 1937, exclusive of government payments. Since the higher price of corn in 1937 was due largely to the

[3] *Iowa Farm Economist*, IV, (4) October, 1938.

drouth of 1936 and to the increased demand for farm products (resulting from the increase in industrial production), it is practically impossible to segregate the net effect of the AAA program.

In an effort to secure more detailed information concerning the effect of the program on individual farms, the accounting records for 1937 were divided into three groups as follows: (1) farms on which no payments were received in 1937; (2) farms on which the largest acre payments were received; and (3) farms on which the smallest acre payments were received. In addition, the records in Area 4 (the cash grain area) were grouped on the basis of their cooperation in the 1936 and 1937 programs. Payments were received in 1937 by Illinois farmers largely because they cooperated in 1936, but on a few farms because of their cooperation in 1937.

Of the 1847 account keepers 575 received no payments in 1937, 640 were classified as receiving the largest acreage payments, and 632 as receiving the smallest acreage payments (table 1). The investment per acre, percentage of land tillable, and crop yields, indicate that the farms with the smallest payments were in part at least farms on lower grade land than those receiving the largest payments. This is logical, since the payment per farm is determined both by the amount of participation and the appraised productivity of the land. The evidence available indicates that the farms receiving no payments were typical of the entire group of account keepers.

In comparing the farms receiving no payments with those receiving the largest payments, the following facts are of interest. The farms receiving payments were larger than those receiving no payments, a higher percentage of the land was tillable, and the total investment was $5 an acre higher; although a part of this difference was because of a larger inventory of feed and livestock. The farms with the highest payments had 9.6 per cent less corn, and 21.1 per cent more hay and pasture on tillable land than the farms receiving no payments. Corn and oat yields were higher on the farms receiving payments and on these farms more feed was fed per acre to productive livestock. The higher yields were the result of a combination of circumstances; more legumes in the cropping system, more livestock, and a higher quality of land. Total expenses per acre were slightly higher on the farms receiving payments and the expenses per crop acre for labor, and for horses and machinery, also were higher. The net income per acre and the

TABLE 1.—ANALYSIS OF ILLINOIS ACCOUNT RECORDS WHEN GROUPED ACCORDING TO PARTICIPATION IN 1936 AND 1937 AAA PROGRAMS

	Area 4:* Cooperators in 1937 program		Area 4:* Noncooperators in 1937 program		Average, all Illinois account records, 1937		
	Payments received in 1937	No payments in 1937	Payments received in 1937	No payments in 1937	No payments	Largest payments	Smallest payments
Number of farms	222	48	57	81	575	640	632
Acres per farm	270	245	248	245	217	224	235
Percentage of land that is tillable	89	90	90	92	83	86	81
Total investment per acre	$145	$154	$151	$151	$123	$128	$113
Gross receipts per acre	$ 20.30	$ 20.20	$ 22.30	$ 21.20	$ 19.34	$ 21.60	$ 17.69
Expenses per acre	10.37	11.05	10.20	10.82	11.36	11.84	10.53
Net income per acre	9.93	9.15	12.10	10.38	7.98	9.76	7.16
Rate earned (Percentage)	6.9	5.9	8.0	6.9	6.5	7.7	6.3
Use of tillable land: (Percentage)							
Corn	36.7	35.0	42.4	45.0	37.4	33.8	33.6
Small grains	26.9	25.5	26.2	27.2	27.2	25.2	26.1
Soybeans	11.4	15.8	15.1	14.0	8.1	5.9	6.0
Hay and pasture	19.8	20.0	13.2	13.0	24.1	29.2	29.2
Other crops	5.2	3.7	3.1	.8	3.2	5.9	5.1
Yield per acre:							
Corn (bushels)	60.4	59.9	58.8	57.3	52.7	55.5	50.8
Oats (bushels)	53.2	52.7	52.7	51.7	47.0	48.6	46.2
Feed per acre to livestock	$ 7.25	$ 7.76	$ 6.90	$ 7.57	$ 9.51	$ 10.48	$ 8.52
Man labor cost per crop acre	5.31	5.45	4.83	5.24	6.19	6.34	6.20
Horse and machinery cost per crop acre	3.81	3.78	3.48	3.49	3.75	4.18	3.98

* Cash grain area of Central Illinois.

rate earned on the investment, however, were appreciably higher for the farms receiving the largest payments. On the other hand, the farms receiving the smallest payments had the smallest percentage of tillable land in corn, the largest percentage in hay and pasture and the lowest rate earned.

The records in the cash grain area (No. 4) were sorted to indicate the participation in the program for both 1936 and 1937. The farms

cooperating in both 1936 and 1937 had 8.3 per cent less tillable land in corn and 6.8 per cent more land in hay and pasture than the farms which cooperated in neither 1936 nor 1937. The rate earned on the investment was the same for both groups. The highest average earnings were for the group which received payments in 1937, but did not cooperate in the 1937 program, while the lowest average return was for the group which cooperated in 1937 but received no payments during the accounting year.

The experience of Illinois extension workers who have assisted farmers in working out farm plans during the past seven years is that there was a wide variation in the ease with which cropping systems on efficiently organized farms were modified to comply with the program. On some farms cropping systems which were maintaining good crop yields and giving better than average incomes were adjusted to comply with the programs with but little change and with practically no loss of efficiency. On other farms equally well organized cropping systems were entirely disrupted by the program, and operating expenses were increased.

The writer is of the opinion that on many accounting farms the reduction in corn acreage required by the program has resulted in a lower income for the year in which the reduction was made. (No allowance for the effect on the fertility level of the farms.) Such detailed analyses as have been made of accounting farms on the more level lands of Central Illinois indicate that net farm incomes increase as the percentage of tillable land in corn increases up to approximately 50 per cent. A reduction of corn acreage and an increase in hay and pasture seem to be sound for those farms having a higher percentage of corn than found on the most profitable farms in the area or for the farms where so much corn is being grown that the productive level of the farm is declining.

The wide range of conditions found on farms within a county or even within a township has made difficult the task of working out allotments for individual farms which would accomplish real conservation. In too many cases farmers with good cropping systems were unable to comply with the program, while a neighbor with a poor cropping system, from the standpoint of conservation, secured a payment without making any appreciable adjustment. The farms in Area 4 cooperating in both 1936 and 1937 had 36.7 per cent of their tillable land in corn, while those who did not cooperate had 45.0 per cent. The average percentage of corn for all accounting

farms in Area 4 in 1932 was 46.5 per cent. The farm accounts, however, indicate that the average net income on the cooperating farms has been equal to that of the non-cooperating, and the cropping system on the cooperating farms has been better from the standpoint of fertility maintenance.

Farmers for the most part have cooperated in the program. The program in some years has appeared more attractive at the end of the season than at planting time. This was particularly true in the drouth years when restrictions were relaxed to permit a more liberal use of forage crops; and in 1938 when the loan value of corn was 15–20 cents per bushel higher than the market price.

The effect of reduced production on price is fairly clear, but the effect on farm incomes requires more careful analysis. When prices are raised by reducing the volume sold the gross income may change but little and may be either increased or decreased, depending upon the circumstances. It is apparent that variations in farm incomes have been much more closely correlated with changes in the volume of industrial production than with changes in the volume of agricultural production.

This suggests some consideration of the conservation aspects of the program. The use of limestone and legumes, particularly sweet clover and alfalfa, are important factors in soil conservation in Illinois. The following data indicate changes in the utilization of these practices from 1929 to date.

Year	Limestone applied	Sweet clover seeded	Year	Limestone applied	Sweet clover seeded
	(thous. tons)	(thous. acres)		(thous. tons)	(thous. acres)
1929	925	750	1934	346	861
1930	811	801	1935	415	865
1931	267	856	1936	1070	895
1932	133	850	1937	1250	955
1933	191	862	1938	1250	—

Since it is evident that the amount of limestone used was influenced by the low farm incomes from 1931 to 1935, the program was therefore responsible for only part of the increase in the use of limestone from 1933 to 1938. In 1936 the use of limestone as a soil-

building practice was listed for 242,000 acres on farms cooperating in the program.

That there is some conflict between the objectives of conservation and reduction of production has been recognized by most students of farm managemet for some time. Farm account records in the Corn Belt show that maximum production is secured on the better soils with a cropping system which has 20–30 per cent of the tillable land in hay and pasture. A study of 460 central Illinois farms for 1931[4] indicates that the total digestible nutrients per 100 acres of land increased as the percentage of tillable land in hay and pasture increased up to 30 per cent. In the long run a conservation program which reduces the acreage of grain crops by 10 per cent and increases legumes by a similar acreage will increase production rather than reduce it. Farm account records have shown that the individual farms which produce enough legumes to keep crop yields above average have incomes above average. A sure way to increase profits is to cut the cost of production, and the cheapest way to cut the cost of producing crops and livestock in the Corn Belt is to increase the production of feed per acre by the use of deep-rooted legumes such as sweet clover and alfalfa. One way to keep the farmer in a strong position is to maintain a high level of production per acre and low operating expenses. The conservation aspect of the program is sound from the standpoint of good farm management.

Summary and Conclusions

Illinois farmers reduced the production of corn and hogs in 1934 as a result of the AAA program; the acreage of corn, however, increased each year from 1934 to 1937, when it was slightly higher than the 1931–33 average. The percentage of all Illinois farmers cooperating in the program declined from 62 per cent in 1934 to 38 per cent in 1937. The percentage of Illinois accounting farmers receiving payments declined from 91 per cent in 1934 to 69 per cent in 1937, while the payment per farm receiving payments declined from $386 in 1935 to $233 in 1937. The percentage of the total cash farm income that was from benefit payments averaged 8.2 per cent in 1935 and 3.1 per cent in 1937. The percentage of participation was less in the Chicago dairy area than in other parts of the state each year from 1934 to 1937. The largest percentage

[4] Journal of Farm Economics, XVII, (3); 537.

participation was in the central part of the state in 1934, but in the southern part of the state in 1937. The payment per farm declined 27 per cent in the livestock section of Central Illinois from 1934 to 1937, but only one-half of one per cent in Southern Illinois.

In comparing accounting farms which cooperated in the 1936 and 1937 programs with those which did not, it is apparent that the cooperating farms had smaller percentage of tillable land in corn, about the same in small grains, less soybeans, more hay and pasture, and a larger acreage of miscellaneous crops, most of which were grown to comply with the program. Crop yields were slightly higher on the cooperating farms as were labor, and horse and machinery costs per crop acre. The return on the capital was the same for both groups. It would seem, therefore, that the cooperators have had incomes equal to the non-cooperators and have at the same time followed better conservation practices.

The farmers who did not cooperate in the 1937 program, but who received in that year payments for cooperating in 1936, had much higher incomes than those farmers who cooperated in 1937 but who received no benefit payments in that year. It is believed that incomes on accounting farms have been lowered by decreasing the corn acreage and by increasing the cost per crop acre for labor and machinery, but have been increased by higher crop yields and by benefit payments. Farmers since 1934 have cooperated for the most part only if it seemed profitable to do so.

The possibility of increasing the income of agriculture by reducing the production of the most profitable crops is limited. Most of the increase in farm incomes from 1934 to 1937 was due to increased demand for farm products.

The program has increased to some extent the application of limestone and the seeding of legumes and grasses. The effect of increased seedings was largely nullified by the drouths of 1934 and 1936.

The long-time effect of a conservation program will be to increase production; therefore the dual objectives of conservation and reduction do not harmonize too well. From the standpoint of good farm management the conservation objective is sound, and on many farms a reduction of corn acreage is desirable from the standpoint of erosion control, fertility maintenance, and efficiency of operation. Unfortunately, on many farms the program allotments do not coincide with the acreages that should be planted to secure better than average yields and income.

Discussion by R. J. Saville

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The only reference made by Professor Johnston to the AAA program in the cotton area is concerning the reduction of acreage and production. He states that there was a decline of 28 and 13 per cent for acreage and production, respectively, between 1928–32 and 1933–38. A study in two parishes in Louisiana of 3,433 farms for which 1936 applications were available, showed that the estimated acreage of crop land exceeded the measured acreage by 16.7 per cent. Probably the reduction in acreage is much less than his data indicate. To lend further weight to this position the same study revealed that the colored operators over-estimated the acreage more than white operators, and tenants more than owners. Also, in the 1936 program which provided for benefit payments up to 35 per cent of the cotton base, there were many instances in which farmers diverted more than the maximum for which benefit payments could be received and received no payment for it.

For the remainder of my discussion I shall attempt to show the similarity between changes in the cotton area and those of the Corn Belt for the factor considered by Professor Johnston. The effects of the drouth were quite significant in the trends in cotton production. Weather conditions prior to 1933 were conducive to relatively high yeilds in the western cotton area. While the acreage adjustments in 1933 and 1934 were quite uniform throughout the cotton belt there were violent changes in production from practically none in the southeast to over 25 per cent in the southwest.

The period of high cotton prices in the twenties was conducive to expansion of cotton acreage and the relative neglect of other enterprises. When this advantage began to disappear there developed an upward trend in other crops and in the number of livestock. Farm management studies in most southern states showed almost unanimously that farmers were overintensified at average prices for cotton. Thus, the trends for feed and food crops were conditioned by the sharp fall in cotton prices prior to AAA programs and the upward trends have continued under these activities.

In the Corn Belt, it has been pointed out, the shift was away from corn to legumes, hay and pasture. The reduction in the cotton acreage was offset almost entirely by increased acreage of corn, legumes, hay and pasture. Very little of the land has been withdrawn from crop use. In this change the tenants and croppers have retained relatively high proportions of cotton in their crop organizations while owner operators have put in the replacement crop.

In the adjustment program of 1933 it was found for a small sample of identical farms that estimates of yield tended to exceed actual yield for the low actual yield group and to fall short for the high yield group. The underestimation of high yield was about three times as great as the overestimation for low yield groups. Also the tendency to reduce the acreage in cotton preceding the advent of the AAA appeared first in the poorer land areas, except for the influx of new producers, and reached the best areas last. This change apparently began on the larger sized farms first

and moved progressively to the smaller farms within these different areas.

The influence of income in keeping farmers in the program seems to be much the same in Louisiana as Professor Johnston reports for Illinois. A study of 6,400 Bankhead applications for 1934–35 covering five selected areas of the state proves quite conclusively that the non-cooperators were definitely below cooperators in average base and allotted acreages and yields. The benefit payments have been conditioned largely by these two items. Farmers are quite conscious of the amount they are to receive for participation.

The conservation aspect of the present program contains many desirable farm management practices which have long been recommended in the cotton area. Terracing, soil conserving crops and strip-cropping are all practices that should be encouraged. However, Professor Johnston puts the problem correctly when he states that this phase of the program is conducive to increased production in the long-run, and is in partial conflict with the idea of reduced production. The situation in the cotton area is no different from that of the corn area in this respect.

Professor Johnston has confined his treatment of this topic largely to technical changes in crop and livestock organization, leaving largely untouched the matter of changes in economic factors—labor needs, power, credit and other items which go into the growing of crops and livestock. I wish to mention one item that is of considerable importance in the south—the introduction and rapid expansion of the use of tractors and tractor drawn equipment. This has been the real disturbing factor in the tenant, cropper and laborer situation, and has resulted in the increase of a type of day-hand and cropper combination for the operation of the landlord crop as well as the displacement of regular help. Such a change is only started and will have far reaching effects because it does away with the need for so much work stock and feed crops and offers further incentive to plant a higher proportion of the total crop land to cotton. While the use of tractors is not a part of the AAA program, its significance as an influence upon future crop organization is a very vital one.

PUBLIC CONTROL OF LAND USE IN EUROPE

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It is not much more than a century ago that Europe first began to be considered somewhat of a unity in its political, economic, and humanitarian philosophies. But at present it looks doubtful whether we ought longer to continue to look upon Europe as a conglomeration of peoples whose ways and means of organizing their industrial and agricultural activities can be surveyed and summarized under one caption. Yet with this doubt as to the immediate present and future in mind, it still seems permissible to trace broadly some of the common traits of European policies adopted and pursued during the last two or three generations. In doing so we must exclude Russia, because even in the Tsarist era her agricultural structure was different from that of the occident. We may properly include, however, the northern and western successor states, Finland, Esthonia, Latvia, Lithuania, and Poland, because these, since the revolution of 1917, have adopted west-European policies and have emphatically emancipated themselves from the course chosen beyond the western boundary of the Eurasiatic Soviet Empire.[1]

Within the non-Russian group of twenty-seven European nations, despite all their wide differences in economic and political development and their wide range of organizations and policies, we may discover a degree of unity as to our topic of land use control. In order to find the common traits we will have to ignore ephemeral details and seek out the aims and the spirit behind the numerous judicial decisions and the codified legislation. In many a European country, even the topic of land use control may not be known. And yet no country could possibly escape establishing, from earliest history on, very definite rules and laws regulating the use of land by the community, the family, or the individual. In predominantly agricultural countries, the statutes referring to the control of the use of land may even be the core of their legislation.

The reshaping of the customs and laws comprising the agrarian structure has been a most powerful influence behind the continuing

[1] Even under the Tsars the five states had different customs, laws and administrative rules. Poland had the Code Napoleon. Finland had her independent administration.

domestication and colonization of the European continent during the period of its fantastic growth of population. The exceptionally long era of five decades of political stability preceding the World War gave many of these provisions composing the agrarian structure the appearance of being a customary part of the general environment. It is only since the World War that Russia's experiment with new forms of an agricultural constitution, the Mexican revival of the Ejido, and recent revolutionary experiments in Germany have suggested the possible impermanence of the European status in that particular era.

The influence of customs and laws upon the use of land is fundamentally traceable to the institution of property in land. In each state the "agricultural constitution" was not a preconceived homogeneous code, but on the contrary grew slowly in times of peaceful evolution by an incoherent process of abolishing existing laws and replacing them by others one by one, and only during and after revolutions by wholesale drafting of new laws. But the amazing fact remains that even now the agrarian structure of the European countries for the last three or four generations is pervaded by a common philosophy concerning property in land.

The spirit of this philosophy can perhaps be understood only in the light of the conditions that preceded the era of the Industrial Revolution and from the many portents indicating the end of the great era that began with the American and the French revolutions and that, after the World War, showed the first signs of transition into another phase of history. In spite of oscillations, this industrial era grew up with and itself produced many basic institutions in the rural sphere which may be grouped together as incorporated in the doctrine of liberalism. After bloody revolutions the philosophy of property in land struggled fiercely against the order inherited from the Middle Ages, the feudal structure. This was so far a part of the rural existence of nations that in some countries, such as Germany, Hungary, and the Baltic and western successor states to Russia, remnants of it survived until the latter part of the last century, and at the end of the World War considerable evidence of it still existed. Like the divinely ordained medieval society as a whole, the implicit feudal rural structure was built upon a static hierarchical order with effective prohibitions against disturbance of the equilibrium by unwanted progressive activities of individuals. Economically, the feudal society was plagued by great

scarcity and recurrent devastating periods of famine. With a religious doctrine in the background, it tried its best to organize social security within the scarcity by providing charity and care of the aged. The princes and the landlords were the guardians and trustees, while the individual was tied to the sod and bound in all that he did or could do by the feudal rule, or, if he was a free peasant, by the equally stringent customs and unwritten law of the rural community.

The secularization of the clerical background and values of society and the overthrow of the feudal order by the liberal doctrine, though prepared by rationalism, natural sciences, and natural law, began with the reorganization of the legal institution of rural property. The liberal doctrine suggested that free individuals, granted the right to earn the yield of their toil, would deliver the greatest productive power that mankind could muster. Consequently, this doctrine regarded outright property in land by free individuals as the necessary prerequisite for unleashing the greatest possible productivity. In parting with former traditions, the new legislators went so far as to grant individuals all three components of property in land as stipulated by Roman jurists: the *jus fruendi*, or the right to obtain the fruit from the land; the *jus utendi*, which is the right to cultivate or improve the land and to change its utilization; and the *jus abutendi*, or the right to partition the land, to neglect or abandon or destroy it, to encumber it, to leave it to heirs, rent it, sell it, or dispose of it in any other way.

In bestowing these extraordinary powers upon the owners of land, it was supposed that the competition of the most efficient farmers who could outbid the others, the severity of the bankruptcy laws, and the proceedings of tax collectors against delinquent land owners would sufficiently balance this possible maximum of rights of the individual, and would establish a new equilibrium between the prerogatives of private entrepreneurs and the necessities of society. It was also supposed that through the process of the elimination of the unfit, effectuated by bankruptcy on the one side and economic and social advance of successful individuals on the other, land would slowly but surely pass into the hands of the fittest farmers; and that, moreover, the law of prices and costs would establish by its own operation the optimum distribution of land and its socially most desirable utilization. Destructive exploitation would create shortages in the commodity markets and

bring about higher prices, and thereby would disappear because farmers would find profits in shifting methods that sustained yields.

Liberation of the supposedly responsible individual from restrictions once imposed by the state, feudal law, the community, or the family evolved slowly during the era of liberalism. In such countries as France, this freedom reached its maximum, while other countries retained modifications.[2] Although the persistence of custom mitigated and postponed the results considerably, where freedom of individual action came, it brought about the capitalization of agriculture, the application of inventions and scientific management, and not least the miracle of creating plenty instead of scarcity. Such countries as the Netherlands with the province of Brabant, and Switzerland were centuries earlier than the others in abolishing serfdom and in establishing free family farmers, and they also lead agricultural progress at the present time.

Yet however clearcut may appear this generalization on liberal solutions of the property right in land, the problem of exactly how much freedom to grant to the private proprietor of land in his utilization of this unique resource has never ceased to be most intricate and complex, no matter which we take as an example for the solutions chosen. But before we can examine the several constituents of the compound property right that invariably lead to frictions between the individual and society, we must glance over some other institutions that constitute essential parts of the framework that is built around private property in farm land.

Before the liberal era, the forests were either the lord's property or belonged to the community; while the range land, the wasteland, and the permanent pastures were also communally owned. The most important change from the feudal to the liberal rural structure was that, together with the abolition of servitudes, the common land was appropriated by individuals. In England and Wales, for instance, the major part of the common land was taken by the lords. But in most countries with a dominant layer of family farms, the common land was appropriated by the members of the community. By this appropriation the common pasture and woodland became accessible to clearing and cultivation, though some coun-

[2] Cf: The liquidation of forest and common pasture of servitudes in Lithuania of August 7, 1931 (!). *Annuaire International de Législation Agricole*, XXI: 966–972, 1931.

tries, like Switzerland, have maintained a good deal of their common pastures and forests.

The forest has been separated from the good arable land and has gradually been pushed back toward the steep slopes of the mountains, or to the thin or poor soils. However, since most of the progressive countries had already reached the stage of tree culture before the emancipation of the peasants, all of them adopted protective forest laws. These reached their highest development in mountainous countries where agriculture cannot be conducted except under a protective forest shelter, and where even urban habitation is always threatened by avalanches and floods—as is the case in all the areas grouped around the Alps, the Sudeten, and the Carpathian mountains. Switzerland, Austria, and the Southern German States are the models for the most refined forest "constitutions." Finland, Sweden and Norway are their equals in forest protection.

The forest legislation as such has checked excessive clearing and forced sustained yield management upon private owners of forests. Forest taxation, the retained or reestablished family entails for forest property, and in some states extensive public property in forests and efficient public management of them have supplemented the laws concerning the forest property rights. The most pronounced effect of forestry legislation upon land utilization has been the final fixing of strict lines of demarcation between land in forests and land in agricultural cultivation, whereby the floating frontier with its concomitant social mobility and instability has disappeared. The absolute forest land has become taboo to farming. Thus the land unfit for tillage, meadows, or permanent pastures, especially the soils and topographical types which wash away badly, and land which is at the same time not needed for industrial or residential use, are subject to strictly limited private property rights or subject to public ownership. And yet, as a general principle, an owner remains free to manage, utilize, lease, sell, pass to heirs, or mortgage his forest as he pleases, so long as such use does not directly or indirectly injure other individuals or the public welfare—such injurious activities being carefully defined by wisely drafted forest laws.[3]

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[3] See the very instructive survey on "Public Control over Private Forests in Other Countries," contained in 73d Congress, first session, *Senate Document No. 12. A National Plan for American Forestry*, Washington, D. C., 1933, pp. 1005–1038.

Thus the forests have finally stopped moving and have settled down on their final location. The forests represent a considerable item making for stability of agriculture as such; a good deal of rural industry and of rural employment in winter depends on prospering forestry; and forests as a recreational resource have for generations attracted sympathetic patronage from the public. Hence a remarkably high degree of fire protection has been accorded to forests. Even the controlled use of fire as a technique of cultivation has been abandoned. Several countries even successfully prohibit smoking in forests during the dry season. Causing forest fires by negligence will bring not only criminal prosecution, but also damage suits by the owner of the property.

Another group of laws that has restrained the absolute freedom granted by the property rights in land concerns the utilization and exploitation of water as a natural resource, or the canalizing or removal of water. Customary riparian rights and a continuous flow of special legislation, or as in English practice the adjudication of conflicting interests of navigation, water mills, hydroelectric power plants, irrigation, and drainage according to the changing necessities of economic progress, could not fail to carve deep inroads into the domain of sovereign individual property rights. Switzerland, on the other hand, offers an example of a country where ancient customs had established such wise community control of water rights that very little change was needed. This legislation belongs to the spheres of public as well as of private law. Americans may find it interesting that in many a European country private property law in combination with riparian law has contributed toward checking soil erosion. In Germany, for example, the lower neighbor is forced to accept all the water that is passed on to him, but is not bound to take rocks, gravel, or silt. For such abuse of drainage rights, if resulting from negligence, he can sue for damages. Hydroelectric power plants can sue for damages against those who silt their reservoirs. This shows how acutely the distinction is drawn between the private and the public domain. A convenient solution for irrigation and drainage has been found in the method of withdrawing from private domain the collecting ditches, drainage canals or irrigation systems that affect a large number of farms, and organizing them as semi-public cooperative associations, as corporations in public law, or as public institutions proper. Yet the private property in the land holding the stream or canal remains valid

except for interference with the publicly controlled flow of water.

Another encroachment upon the private sphere, though in general not very important, hangs over from feudal times. Mining the substance of land had been prohibited unless royal, princely, or other authoritative permission was granted as so-called "regalia." Quarries of stone, sand, gravel, loam, kaolin, or clay or peat pits could be operated only under such ancient licenses. And though the outright property title to land could not have flowered fully in view of these interferences, the *jus abutendi* could be broadened enough to permit them. Many laws and controls have inhibited the expansion of the forms of land exploitation that frequently change the landscape irreparably. The urgent need for coal and other minerals has on the other hand often opened the road to open-pit operations on a large scale; yet legislators have considerably reinforced the property rights of the cultivator of the land surface by granting him the claim to indemnity against anybody who lowers the water table or otherwise changes the fertility of the land by mining or other industrial enterprises; that is, by smoke, factory fumes, or pollution of waters.

With the demarcation lines between agriculture, forestry, and mining set, and with riparian rights and water laws incorporated either in the civil code or in special legislation, many broad opportunities remain for conflicts and frictions between the commonwealth and the individual in the exercise of rights bestowed upon him by the liberal constitution.

Practically all of these controversies emerge from the *jus abutendi*, which includes as mentioned before the right to delegate the *jus fruendi* and the *jus utendi* and various contracts and conditions to tenants. Mutual distrust between landlords and tenants,[4] as well as a multitude of other unfavorable circumstances, had a detrimental influence through the operation of mismanaged or unfair tenancy contracts upon the standards of farming and land utilization in general. Hence many European countries, with England in the lead, have adopted legal reforms of tenancy which maintained the fundamental rights of the proprietor but strengthened the rights of the active cultivator.[5] In all the tenancy reform

[4] See Brandt, K., "The English System of Regulating Landlord-Tenant Relations," *Jour. American Soc. Farm Managers and Rural Appraisers*, II, Apr., 1938.

[5] Belgium, Holland, Denmark, Sweden, Germany, Ireland, Scotland and Spain have adopted policies of reforms or adjustments of farm tenancy.

laws covering more than five decades, we discover that in addition to the attempt to establish an equilibrium of rights and duties between the two contracting parties, there is also a common tendency to adjust the legal facilities sufficiently to control the use of land indirectly for the benefit of the whole economic system. Sustained yield methods and improvements are stipulated as practices in land use that deserve a premium for the landlord as well as for the tenant and that deserve protection under law.

Other aspects of the *jus abutendi* which give scope for controversies between the individual and the public are found in the inheritance laws as well as in the legal provisions concerning acquisition and sale of land. France has moved for almost a century toward a final form of its law of succession on farms. This consists of the absolute right of each heir to claim his share in the landed estate in nature or to force its sale for the purpose of division in money. Germany, on the other hand, maintained until 1933 certain voluntary forms of entailing family farms and succession by primogeniture. This question of inheritance has a definite influence upon land use because up to a certain point in the subdividing of farms, the equal right of the heirs leads to intensification of agriculture. However, the consequences and implications of inheritance laws are so complex that it is inexpedient to arrive at more far-reaching generalizations. It is pertinent, however, that Germany has recently definitely abolished the *jus abutendi* for approximately fifty per cent of the land by subjecting it to a revised form of entail plus homestead law. The interesting change from the viewpoint of land use control is the new concept of property. This intentionally departs from the liberal tradition. Property in any of these homestead yeoman farms is no longer an absolute title in the hands of an individual, but a restricted functional right of usufruct which can be held by the farmer only if he fulfills the duties imposed upon him by the nation. The domestic domain remains intact as a sort of credit established currently as obligations are fulfilled. First among these obligations is the duty to use the land as a good husbandman according to contemporary standards. On this occasion there is little importance in inquiring how far the severity of this law stands merely on paper; but the concept of a functional property is not confined to Germany. For several years France has considered a reform of its radically liberal interpretation of property rights in land. In general, the tendency seems to gain

strength to reestablish or introduce the marked differentiation between agricultural land and all other goods that was indigenous to Germanic law but not to Roman law.

Other curtailments of the *jus abutendi* similarly aim at a specific land utilization. The various curtailments of liberty to encumber the land with debts and of the rights of creditors, as well as the laws providing for scaling down debts and conciliation, have ultimately aimed at protecting the farm population in order to foster better use of the land to avoid abandonment of farms or depletion of the soil. It hardly need be said that profound social motives were also responsible for these emergency policies. Still other indirect measures of control of land use have been introduced in several countries by curtailment of speculation and absentee landlordism. Immediately after the war, for example, Germany adopted a law which provided that only professional farmers could buy farms and that every transfer of farm property required the approval of the proper authorities. The same set of laws provided for the expropriation with compensation of agricultural land which was left idle, or improperly used, or infested with noxious weeds. Other countries have adopted similar laws, which together tend to force more intensive and conservative use of land. Agricultural land has slowly acquired a position distinctly different from that of all movable goods.

However, the complex property rights of individuals by no means lead to frictions only because of the initiative and the necessarily selfish interests of private proprietors. The frictions come also from the state or the public. The more the realm of the state expands and the more public agencies become active, the more it becomes obvious that they begin to infringe upon the rights of individuals and their legitimate pursuit of business. Policies of public development of inland waterways, hydroelectric power sites, and dams for flood control are likely to lead to wider application of rights of eminent domain. Consequently, rights of individuals tend to be curtailed through underpayment of compensation.

The most pronounced encroachment of public activities upon private rights, and indirectly upon land use, results of course from production planning as incorporated in the various national "x-year plans." Such plans have been adopted as means of arriving at national self-sufficiency in certain raw materials and foodstuffs.

Therefore, the state that launches such a plan tries to compel all individuals to utilize to their best ability the resources which they control in compliance with the special objectives of such national drives. In Germany and Italy such plans have introduced all sorts of curtailments of property rights, not only the *jus abutendi* but also the *jus fruendi* and the *jus utendi*. Compulsory cartellization quotas for marketing, licensing systems, rationing of certain types of utilization of agricultural produce, and similar devices to guide the farmer have partially supplemented the competitive system. And yet it should be noticed that these super-dictatorial states, with all their decisions to force to the utmost the efficiency of their economic systems, have not found it appropriate to control the use of land directly. Perhaps the most far-reaching influence upon land use traces from Germany's policy of reducing the prices of nitrogenous fertilizer. Yet even this operates indirectly via prices and costs. In other countries which have no intention of becoming self-supporting, but where agricultural exports are suffering, as in Switzerland, Holland, and Denmark, the governments have adopted policies of controlling agricultural production by quotas assigned to farmers. These policies could not but interfere indirectly and at least temporarily with the *jus fruendi* and the *jus utendi*. And even France and England have adopted systems of subsidies with the intention of fostering without direct compulsion certain types of land use (British wheat and sugar acts), or of maintaining the cultivation of land at a desired level.

All of these policies pursued since the World War, from state intervention to an "economie dirigée," as the French aptly call planned economy, represent a more rigorous development of prewar protectionism. The manifold devices of foreign trade policy in behalf of the farmer have functioned as a policy of land use control. By altering the profitability of the production of specific commodities, if not of agriculture as a whole, the use of land for specific purposes has been expanded or intensified. Frequently economic adjustments to international competition have been stopped, even reversed. Belgium, Holland, and Denmark, besides Great Britain, are the only countries that had chosen the course of free trade over a rather long period. It needs no special comment to show that protectionism permits control of the use of land, though it operates without direct interference. Protectionism affects prices, net profits, land rents, and land values, and conse-

quently land utilization. In general, one may assume that it fosters more intensive land use and sustained yield methods, especially if applied moderately.

There remain other general policies which have a bearing upon land use control; policies of zoning, of resettlement, and of land reclamation.

Zoning has been tried and adopted in Germany with the intention of protecting agriculture against the detrimental influences of industrial and urban real estate speculations. Especially in the densely settled part of the West, with its intensive industrialization, the division of large areas into industrial, residential, and strictly agricultural zones has been achieved, or at least brought to a tentative stage requiring continuous remodeling. These zoning laws have forced many farmers on the outskirts of industrial sections to resume intensive cultivation and to renounce their previous designs of keeping the land almost idle, simply awaiting the moment when they could cash in on the capitalized rise in land rent. On the whole, however, this zoning policy has had only a minor influence on land use.

Resettlement policies, on the other hand, have definitely brought about considerable changes in the utilization of land in several countries. Throughout Middle and Eastern Europe, the World War was followed by an agrarian reform which altered land distribution, the number and the size of farms. Western Europe and Scandinavia refrained from drastic reforms partly because few large estates were left, and partly because, where some remained as in Great Britain and France, they did not represent a problem. In Italy and in Spain reforms were badly needed but long postponed. The post-war agrarian reform in Eastern and Central Europe has broken up large estates and distributed the land among small farmers. In each of the five Russian successor states, and in Roumania, Bulgaria, Yugoslavia, Czechoslovakia, and Austria, the general set-up of agriculture was reshaped by comprehensive legislation aiming strongly toward internal colonization and resettlement. Of course, this could not fail to affect land use profoundly. Small- and medium-sized family farms in Europe have a higher ratio of livestock, especially cattle, per acre than large estates. Cattle, as the real symbol of soil conservation and soil improvement, fostered more intensive pasture cultivation and improved the manuring of the tillage. In general, but not without local exceptions, as pos-

sibly Roumania, this post-war European agrarian reform has probably improved land utilization in spite of the frequently higher technical standard of the former large estates.

Other types of adjustments which have been pursued in many countries aim solely at better utilization of land within family farms. As a remainder of the common field system and the sharing of each farmer in community clearings, and in more recent times as a consequence of splitting the field in case of inheritance in some parts of Europe, the field pattern of family-farm regions is composed of narrow strips, often not larger than one-fourth or one-sixth of an acre. The loss of useful land lying idle as boundaries and lanes, the impossibility of using machinery officially, the necessity of passing through a neighbor's land, and the wasting of energy in useless transport from one strip to the next, have induced governments to establish a legal and administrative process for consolidation of fields. Several countries, Germany and France among them, have passed laws granting even to minorities the right to start the compulsory consolidation of all the land in the community.[6] Obviously such a policy must improve the utilization of land, the more so because it permits the introduction of greater efficiency into districts which have the most intensive cultivation anyway.

Land reclamation is another chapter of European land use control. There is no European country which has not pursued in recent decades an energetic land reclamation program, and which has not invested large public funds, and offered outright subsidies or long-term credits at reduced interest for purposes of land reclamation. In northern Europe the prevailing improvements are drainage works, reclaiming swamps and river bottoms, and diking off tidal marshes, while in the Mediterranean countries the accent lies on irrigation. A continent with such density of population and scarcity of well-drained great plains has for centuries conquered and broken in more and more land that once lay waste because it was temporarily too wet or too dry or because it lay permanently under water or in the desert. The whole European continent is full of all sorts of land-reclaiming activities carried out by millions of farmers as well as by public projects on a large scale. The wresting

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[6] Cf. France: Décret modifiant et abrogeant la loi du 27 Novembre 1918 sur le remembrement de la propriété rurale, 30 Octobre, 1935. *Annuaire International de Législation Agricole*, XXV: 712–715. Germany: Flurbereinigungs Gesetz, June 16, 1937—*Reichsgesetzblatt*, I, No. 70, p. 629, June 18, 1937.

of 864,000 acres of fertile land from the Zuider Zee in Holland, the various projects of gaining land in the tidal marshes of the North Sea, swamp cultivation in Germany, Poland and Italy, and projects of reclaiming eroded land in Italy and Roumania[7] are a few of the well-known examples. But the less conspicuous tilling of plowland, cooperative drainage of meadows and pastures, and similar improvements by the farmers of all countries account for a greater change in land use than all the big projects put together.[8]

Conclusions: On the European continent, despite its immense spread in historical and economic development, its variety of agricultural systems, its diversity of standards in agricultural production, and its still wider range of philosophies of agricultural policy, there is nevertheless a relatively uniform trend in attitudes toward land use control. All countries have maintained private property as the most sensible and appropriate form of delegating to individuals the right and duty of utilizing the nation's land resources. Nowhere has private property in land been abolished. Europe, including its activistic dictatorships, has decided in favor of this private decentralized control of land resources and against centralization of control of the kind chosen in Soviet Russia. At the same time, the other extreme of private property in its absolute sense of fee simple and the manifold implications of *jus abutendi* in its perfection, as it still exists in the United States and in the New World in general, has not survived in the great majority of European countries. Land use control is exerted with remarkable success, but almost invariably through indirect methods.

The same profound convictions that have prevented the abolition of private property in spite of the pressure of left wing movements springing from poverty, unemployment, and distress, have also prevented the direct approach to land use control. For three generations the philosophy behind the scores of laws referring to land use has been that adjustments between the rights of the individual and of society as a whole must be attained in a manner which does not discourage or destroy private initiative. The *leitmotiv* that an optimum of individual freedom combined with social control must be attained weaves through all the legislation in

[7] Cf: Loi concernant l'amélioration des terrains dégradés, 26 Juin 1930. Monitorul official no. 141 (28 Juin 1930). From *Annuaire International de Législation Agricole*, XX: 990–998, 1930.

[8] Cf.: Article on Land Reclamation and Improvement in Europe in: *International Review of Agriculture*, XXIX, nos. 10, 11, October and November, 1938.

every European country. We should not forget that this theme is fundamentally political as well as economic. The alternative shortcut, control of public property, means political instead of economic control of production. This remains valid even though a New Zealand farmer on a Crown lease in the politically temperate British environment may not feel much difference, and an English tenant may not care especially whether he pays his rent to an absentee lord or to the state.

The tedious and time-absorbing process of reconciling private control of land use with the necessities of social control has led to a trend of thought that moves away from an abstract and absolute concept of property toward one that is more or less "functional." As the Constitution of the German Weimar Republic put it: "Property is an obligation. Its use shall be at the same time service to the common weal."

In the dictatorial countries, the rights of property in land today are valid only insofar as the obligation and civic duty of making adequate use of the entrusted resource is fulfilled. Here we find the most pronounced drift toward the functional concept of property.

In all countries the most controversial component of the property right in land—the *jus abutendi*—has been curtailed to a certain degree and most markedly in the German yeomanry homestead law (Reichserbhof Gesetz).[9] If all signs do not deceive us, it is probable that more countries will embark on policies restricting certain implications of the *jus abutendi*. French policies may take such a turn soon. In addition to these modifications of the concept of property rights, the entire sphere of forestry has been subjected to elaborate social control schemes, whereby the scope for the private entreprenueur to shift the utilization of that large fraction of the land area has been so circumscribed as to prevent undesirable exploitation.

To interpret this trend correctly, it may help to look upon this secular development as an interplay of action and reaction. The mediaeval rural structure accorded a minimum of property rights to the toiling farmer. Four or five generations ago, the revolutionary overthrow of this structure led in many instances to an excess of private property rights and a minimum of public rights. Today the pendulum is swinging back toward an intermediary position represented by a more maturely balanced and adjusted exertion of prop-

[9] *Reichsgesetzblatt*, I, No. 108: 685, September 30, 1933.

erty rights by the individual with due consideration of obligations to society as a whole. In view of the high density of population, and the resulting scarcity of land and the need of utilizing it intensively and intelligently, it is very impressive to observe how profound is the respect for the necessity not to narrow the scope of the individual farmer's initiative more than is absolutely necessary. This respect is to be perceived in the animated debates, the party platforms, and the laws. European nations and their statesmen obviously know that the high standards of European land use are the result of the freedom granted to millions of farmers. Direct methods of land use control by state planning or public administration are negligible in Western Europe, though they may receive some prominence under state-controlled propaganda.

DISCUSSION BY M. M. KELSO

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Mr. Brandt has handled very well a difficult assignment. As he says, it is doubtful if we in America should continue to think of Europe as a society whose laws and customs can be summarized under a single caption. We can not therefore expect that Mr. Brandt could have discussed specific land use control measures for to have done so would have resulted in overemphasis of some public acts and the complete omission of others probably of equal importance.

Nevertheless, Mr. Brandt has found one aspect of land use control that is common to all European nations (excluding the Soviet Union)—the overwhelming tenacity of private property in land and the resulting necessity that land use controls be effected through methods that leave the land in private hands even though the private property remaining may occasionally be but a shell of what it was. He finds only with respect to forest land any appreciable tendency to a replacement of private by public property.

For us in America the most significant aspect of Mr. Brandt's paper is its portrayal that public land use controls may take an almost endless variety of forms and may be initiated to serve a wide variety of ends. Europe with her long period of medieval and modern history and with her wide diversity of conditions has had both the experience and the urge to develop a wide diversity of measures. They have been variously directed to serve the ends of land, water and timber conservation, increased national self-sufficiency, and an improved economic status for the rural population; they have included legal reforms of tenancy, modifications of inheritance laws and the laws concerning acquisition and sale of land, restrictions in rights to encumber land with debts and in the rights of the creditor, curtailment of speculation and of absentee landlordism, power

of public expropriation with compensation for idle, improperly used, or weed infested land, production control (which in itself is made up of many devices), zoning, resettlement, land reclamation, laws requiring land consolidation, and public purchase and management.

Though long I have listed the types of land use control measures touched upon by Mr. Brandt in order forcibly to bring to our attention that, if European experience is helpful, there is no cure-all for the problems of maladjusted land use so long as we intend to work out our adjustments within the frame-work of private property. To quote Mr. Brandt, "the problem of exactly how much freedom to grant to the private proprietor of land in his utilization of this unique resource has never ceased to be most intricate and complex." We in America, because of our history of vast free resources of fertile land associated with a scarce population and because the settlement of the former took place while the latter was under the dominance of the philosophy of liberalism, are only just moving into a stage of our social evolution where we feel a restive but yet scarcely recognized need for measures of land use control in the public interest. There are differences among us as to which phase of the public interest we should find measures to benefit and too often we are groping around to find the one measure, forgetting that the problem is "most intricate and complex." One might draw the inference from European experience as interpreted by Mr. Brandt that there is an incompatibility between private property in land and any single legislative panacea for control of its use.

European experience seems to indicate the necessity for attacking land use problems on many fronts if we are to work out our adjustments within the frame-work of private property. And how much more true is this as applied to America as compared to Europe because of our federated form of government. Certain public powers related to land use are reserved definitely to our States while others not so restricted can best be exercised by the Federal Government. It is inevitable, therefore, that there will be a multiplication of measures in America through the legislative and judicial activities of forty-eight States and a Federal Government. It is an obvious corollary that we must develop means for close coordination between the exercise of the land use control powers of the several States and of the Federal Government if there is to be some order in this complex realm and if there are to be no outright conflicts between measures. There must be a certain degree of agreement between the several sovereignties involved concerning the nature of any particular land use problem and the sort of adjustment required to correct it and there must also be a degree of coordination between them as to their mutual roles in its solution.

Mr. Brandt tentatively advances the concept, "functional," as characterizing the institution which makes possible the complex web of land use controls in Europe. This conception departs from liberal tradition. Property in land, if such controls of use are to be applied, can no longer be an absolute title in the hands of an individual; it is necessary that there be a generally accepted idea of property as a restricted right of usufruct which can be held and exercised by an owner only in so far as he does not

interfere with the public welfare. Needless to say, such a concept is ready at hand for us in America through the well established principles of eminent domain and the police power implanted explicitly or by implication in the fundamental laws of all our States and of our Federal Government. The difference between our conception of property in land and that of Europe as described by Mr. Brandt is not one of kind but of degree. Parenthetically, I question whether the "abstract and absolute title in the hands of an individual" ever existed outside our classical textbooks in law and economics although it probably came closest to existing during the age of settlement and exploitation in the New World from which we are now emerging.

It does not follow, however, that the intensification of the "functional" conception of property in land in America will soon approach what it is in Europe and we should not be too much encouraged because Europe has been able to work out and apply reasonably effective controls. We do not have the cultural background to encourage the modification of thinking required. Our past did not include an age of regulated land use in the public interest, such as existed in Europe during the age of feudalism, which as Mr. Brandt says, had not disappeared from the agrarian scene in many countries at the time of the last war. We have a long period of public education and discussion before us—we must manufacture the conception almost out of whole cloth and from the problems of our surrounding environment. We cannot select out of our past familiar materials for our conception to the extent such can be done in Europe. There is danger, therefore, that our problems that arise from unsound land use may persist longer and become more acute and that irreparable damage may be done to some of our resources before our conception of the "functional" nature of property in land will intensify sufficiently to permit the doing of what must be done. The mere existence of the conception in our fundamental law does not insure our following in European footsteps. A great deal of education and "trial by fire" will be needed before a web of land use controls in the public interest will exist in this country in any degree approaching what now exists in Europe.

PUBLIC CONTROL OF LAND USE IN THE UNITED STATES

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Social control over the use of land is not new nor untried in America. It lies in the sovereign power of the state itself. Take, for instance, a clause in the Wisconsin state constitution framed in 1848 by men grown up in the atmosphere of Jeffersonian democracy and the freedom of the frontier, "The people of the state in their right of sovereignty are declared to possess the ultimate property in and to all lands within the jurisdiction of the state." (Art. 9, Sect. 3.) Through eminent domain, the authority to tax and the police power the state exercises the rights of sovereignty. The right exists; the real question is whether the people are willing to make use of these powers and how far it is wise and reasonable to do so. Courts will generally test the constitutionality of such controls on the basis of reasonableness.

Public control over land use takes three forms: (1) direct administration of lands in public ownership, (2) regulations or control induced by or incident to subsidies paid to private owners, (3) public regulation of privately owned land through the police power.[1] This paper will exclude the first because it is always within the power of a public land owner to do with the land as it pleases, and also the second, because it is only right and proper that whenever the government assists an individual that it should lay down the rules under which the grant, subsidy or donation is made. The treatment will be confined to the regulation of non-urban land uses under the police power in the interests of public health, safety, morals and the general welfare. In this case no public compensation for the loss of income for damage or inconvenience is required, though not excluded as a part of the good will of the state toward its citizens.

It is proposed also to avoid legal questions such as the division of powers between federal and state governments, the problems of due process, of police power and public purpose, the delegation of power, or the constitutionality of the use of the police power as

[1] Glick, Philip, "The Soil and the Law," JOURNAL OF FARM ECONOMICS, XX (2), 430 (1938).

an instrument of rural land use control.[2] However, it is important to point out that since the police power rests in the state the federal government is impotent to use this power except in the few cases of delegated authority. Local units of government are likewise helpless to use it as a weapon of social control unless the state directly or indirectly delegates the power to municipalities, towns or counties or to extra-legal units of government such as the soil conservation districts. However, in so far as the power rests with the state or is delegated to local units of government, land use control is highly decentralized. Being decentralized it is democratic, which means that it is subject to the will of those enlightened enough to use it, as well as the will of those who are ignorant or prejudiced enough to defeat or nullify land use regulations. This is fortunate or unfortunate depending on the point of view. Moreover, it brings us back to the statement made in the foregoing that land use control is largely a question of how far people are willing to go and the reasonableness of the restrictions and controls as they see them.

The American attitude toward land is colored by our historical development. The Revolution swept aside not only political traditions but also the remnants of the feudal system. The frontier Jacksonian democracy emphasized the Jeffersonian concept of land tenure. The Ordinance of 1787 abolished primogeniture and entail. Soon thereafter property qualifications were dropped and free transfer of land, allodial tenure, and grants by the federal government without reservations or qualifications became a first part of American land institutions.[3]

In our anxiety to control erosion, prevent the destruction of forests or to curb speculation we seem to accept uncritically the policies of Europe without recognizing fundamental differences. It is one thing to formulate land use policies for a nation with abundant resources and approaching a stationary population and

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[2] See Wertheimer, Ralph B., "Constitutionality of Rural Zoning," *California Law Review*, XXVI, 175–205 (Jan. 1938).

Walker Jr., Herman, "Some Considerations in Support of the Constitutionality of Rural Zoning as a Police Power Measure," *Land Use Planning Publication #11*, Dec. 1936, Resettlement Administration.

Glick, Philip, *op. cit.* and *Yearbook of the Department of Agriculture*, 1938, pp. 296–321.

[3] See the discussion of the ordinance in Shosuke Sato, "History of the Land Question in the United States" in Johns Hopkins University *Studies in Historical and Political Science*, Fourth Series, 1886, pp. 270–277: 338–378.

quite another for a nation with limited resources but which insists on stimulating population increase for reasons which cannot be separated from the social philosophy, ideology and nationalistic ambitions of that nation.[4] As an example, it is claimed that the only way to get better utilization of our farm land is through the inherited family farm, a system made *compulsory* by the German *Reichserbhofrecht* act of 1933 which goes so far as to permit the government to deprive the owner of the right to administer his land or may strip him of his possession completely.[5] It should be recognized, whether voluntary or compulsory, under a system of complete inheritance the land becomes monopolized in the ownership of families now on the farms and closed to all others even to members of the family other than the favored heir.

While more inherited farms are desirable in America this hope is a far cry from social control restoring the essence of entail and primogeniture. Personally I feel that there is something admirable about American land tenure, a free system which has permitted landless laborers and penniless immigrants to climb the agricultural ladder and at a comparatively early age to retire to the nearby town or to California to live off rents or interest. As they retired or rather "retreated" they made room for the next generation of farmers. If the figure of 20 years as the span of ownership is correct, five generations of farmers are permitted to climb the ladder every century.

In saying this I'm not unaware that freedom of tenure has not brought grave abuses—speculation, over-mortgaging—and in many cases the farmer has abused "the ladder by which he did ascend," leaving the land in a worse condition for the next generation. What is hoped for is that we may create a proper attitude toward land and establish such direct controls over land use as will still leave open access to land and the opportunity to rise to ownership and "landlordship."

Extensive investigation would be necessary to present all the

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[4] Ashby, A. W., "The Relations of Land Tenure to the Economic and Social Development of Agriculture." *Proceedings* of the Fourth International Conference of Agricultural Economists, Oxford University Press, 1937, pp. 92–93.

[5] Baker, O. E., "The Outlook for Rural Youth." Cooperative Extension Work in Agriculture and Home Economics, *Extension Service Circular #223*, Sept. 1935, p. 34. "For the better utilization of our arable land I have full faith only in the family farm and in the family with continuity of life and occupancy on the land."

von Dietze, C., "Land Tenure and Social Control of the Use of Land," paper at the Fifth International Conference of Agricultural Economists (1938).

forms of land use control now in use in the United States. The purpose of this paper will be to give examples of the application of the police power and appraise their effectiveness and weaknesses. Some of these controls are exercised by the state directly. Weed laws are an illustration. While the act is a state law the enforcement is usually in the hands of local officials who have been given the power of trespass, the authority of destroying the weeds and forcing the land owner to pay for the expense of the work by placing the costs on his tax bill. As early as 1913 Kansas had a law with identical features for the purpose of controlling wind erosion with the duty of enforcement lodged in the board of county commissioners. Local enforcement did not prove effective; besides, the law was declared unconstitutional in 1936. A new act was passed in 1937 declaring it to be the duty of the land owner to prevent dust blowing. It repeats most of the provisions of the old act as far as the power of the board of commissioners is concerned. The cost for which the owner can be taxed however is limited to $1.00 per acre per year.[6]

Measures aimed at direct control over land use are zoning ordinances based upon powers delegated by the state to lower levels of government. Begun in cities more than 50 years ago, zoning was given the blessing of constitutionality by the Federal Supreme Court in 1926. Early in the 1920's the power was granted to counties in California and Georgia and somewhat later to townships. The first acts were specified grants to particular counties but in 1923 Wisconsin passed a general enabling act under which any county may regulate land uses. This was amended in 1929 to permit districting for agriculture, forestry, and recreation which has enabled this state to practice distinctly rural zoning. By 1937 Michigan, Indiana, California and Washington also had passed general enabling acts permitting rural zoning, while the Virginia, Tennessee and Illinois acts were confined to suburban zoning. Township zoning acts of the urban type had been passed in the New England and three Middle Atlantic states. Since 1937 Pennsylvania has passed a comprehensive act under which both rural and suburban zoning are possible. Tennessee, Georgia, Virginia, Florida and Michigan have corrected, broadened or added new statutes during

[6] Wehrwein, George S., "Wind Erosion Legislation in Texas and Kansas," *Jour. Land and Public Utility Econ.*, Aug. 1936, pp. 312–313; Teagarden, E. H., "Control of Wind Erosion," *Ibid.*, Nov. 1937, pp. 420–421; Hockley, H. A.,—Herman Walker, Jr., "1937 State Legislation for Control of Soil Erosion," *Ibid.*, May, 1938.

1937–38. Florida has tried some direct state zoning by using a legislative decree to set up an exclusive residential area adjacent to the city of Tampa.[7]

Zoning is direct land use control because the ordinances prescribe the permitted and prohibited uses within districts designated on an official zoning map. County zoning ordinances have tried to cope with two types of situations, the fringe between agricultural and urban uses, and the border line between the farming area and the less extensive uses, forestry and recreation. County zoning started with the former and all enabling acts give the county boards the right to regulate building heights, the proportion of the lot to be covered with buildings, density and distribution of population, the uses of structures and land, all of them powers designed to deal primarily with suburban conditions. Some states have permitted township zoning to deal with these problems on a smaller area or given specified counties this authority exclusively.

While the results in general have been satisfactory for those counties and towns which have availed themselves of the zoning power, little has been accomplished by zoning or other land use control measures to regulate and restrict the subdivision of rural land for residential purposes. A recent publication of the New Jersey State Planning Board reports that the unoccupied platted lands of New Jersey cover almost 185,000 acres, enough to supply over one million 50×120 foot lots. An additional four million people could be accommodated on these vacant lots, equal to the present population of the state. Even if the 1910–1930 rate of population growth could continue, it will take 50 to 100 years to absorb the land now laid out in building sites. In spite of the superfluity subdividing is still going merrily on. New Jersey is not an isolated example; Chicago, Detroit, Florida and other places are in the same boat.[8]

The consequences of wildcat subdividing are surprisingly similar to circumstances on the agricultural-forest fringe. Land is taken out of agriculture and frozen in the form of residential plats, which in

[7] Walker, Herman, "Recent Progress in the Enactment of Rural Zoning Enabling Legislation," *Jour. Land and Public Utility Econ.*, Aug. 1938, pp. 333–339. For acts passed before 1937 see the same publication Aug. 1937 (Pennsylvania), (Nov. 1937), Tennessee.

[8] *Land Subdivision in New Jersey* by the New Jersey State Planning Board, Trenton (1938). For the most complete survey, see *Premature Subdivision and Its Consequences*, by Philip H. Cornick; Institute of Public Administration, Columbia University, 1938.

most cases cannot be restored to the former use. The boom subsides and thousands of lots remain unsold; ripening and waiting costs force the owners to let the land revert for taxes, forcing the remaining land to carry the burdens of government which have been boosted to excessive heights by the cost of new streets, sewers, schools and other public services demanded by the subdivider and his clients. "If the whole of the surplus platted acreage is fully improved as now laid out," says the New Jersey State Planning Board, "excessive costs of street improvements alone will amount to from 125 to 150 million dollars."[9] The tax reverted lands, "a new public domain," bring the same headaches to local units of government as to the counties in the cut-overs. The few owners who have built homes have their counterpart in the isolated nonconforming users in the zoned areas of the Lake States.

The agricultural economist cannot dismiss the situation by calling it a "city problem." Although it is a suburban problem the public costs fall upon distinctly rural forms of government, primarily the township and county. Moreover, it is not only platted or subdivided property that is involved. The "hit and miss settler" who buys land by metes and bounds on the outskirts of cities in the shoe string developments along the radiating highways is also setting a pattern of land use which becomes frozen before the city can reach him with some form of land use control. Township or county planning and zoning must become directional measures in this twilight zone.

The problem arises out of the fact that the suburban zoning has concerned itself primarily with restricting all uses but the residential. It was presumed that this use was welcome anywhere in the rural area and not detrimental nor out of harmony with agriculture, wood lands, estates or recreation. Furthermore, local officials were not adverse to new forms of taxable wealth. However, there are times and places where small lot subdivisions are as out of place and incompatible with the rural landscape as the needle trades would be on Fifth Avenue. It has been suggested that the chief reason for segregating land uses should not be the fact that land exists at different levels of uses but that these uses may be *incompatible*.[10] The isolated agricultural settler is out of place in a forest area and so is the bill-board on a memorial boulevard. Ap-

[9] *Land Subdivision in New Jersey, op. cit.*, p. 10–11.
[10] Cornick, *Premature Subdivision and Its Consequences, op. cit.*, pp. 324–325

plied to the suburban and rural areas the concept of incompatible land uses could be used to exclude small lot subdivisions entirely from farming and estate areas as well as the business uses. Zoning can become a directional measure in "steering" the residential districts where they should go by opening rural land only as a reasonable demand for new homes arises. Zoning, however, must be supplemented by more stringent platting laws and other forms of land use restrictions.[11]

Zoning on the agricultural frontier is now permitted in probably six states by appropriate enabling acts, but county ordinances under these acts are still confined to a few states. It is significant that the first ordinances won the approval of the local people, not as land classification measures, but as means for controlling public expenditures. The ordinances struck at indiscriminate settlement whether by farmers, storekeepers or filling stations because scattered residences meant excessive costs for schools, roads, and other public services. It is conceivable to zone a county having no land-use problems as ordinarily thought of. It might be an area having uniformly excellent soil with settlement starting from a given center. All but the area immediately adjacent to this center could be placed in a restricted district from which agriculture and year-long residence are excluded until such time when the demand for additional farms made it desirable to open new lands for settlement. The place, time, and manner of opening up the new area gives zoning its directional application. This is a familiar principle in urban zoning and is similar to the plan suggested for controlling the subdividing of land in suburban areas.

However, in so far as certain parts of the county are distinctly submarginal for farming, zoning can permanently close the land to agriculture. Furthermore, if erosion control, or watershed protection is best served by keeping a part of the county under forest cover, even though supermarginal for agriculture, the courts might support such use of the police power, provided sufficient public welfare can be proven.

Given an area of land which on the whole is best used for forestry or recreation the concept of incompatibility will rule out the intermingling of farms, commercial, industrial or other uses with the acceptable use of that district, even though spots here and there were suitable for farming or the other uses. Incompatibility is one of the strongest reasons for the abatement of non-conforming uses

[11] *Ibid.*, Chap. 7 to 9 inclusive.

and is urged in addition to the argument that isolated settlement should be prevented or corrected because of the high governmental costs or the personal costs and inconveniences to the settler.[12] It is even reasonable to legislate forestry out of an agricultural district if found to be incompatible with farming use and practices.

Recreational districts transcend both forest and agricultural zones in their requirements. The best use for fine riparian property may be for recreation no matter how fertile the soil or how valuable the timber. Clearing shore lands, even on a single farm, destroys recreational values of the entire frontage, besides inviting erosion and silting. Although forestry is permitted under Wisconsin ordinances it may be desirable to prohibit the cutting of timber entirely within recreational zones. Industry, bill-boards and commercial establishments are likewise incompatible with recreation and should be excluded from the recreational districts in the farm-forest fringe and might well be restricted in the forest zones. The shape and size of lots, roads, and regulation of pollution and sanitation are now regulated directly by the state in Wisconsin and New York by state agencies in cooperation with local officials, and in some cases by private deed restrictions. However, there is no reason why these land use controls should not be made a part of the zoning ordinances as is the case in some zoned areas of southern Wisconsin counties. Some of these items are being included in the Delta County, Michigan, ordinance.

Land use restrictions are also being tried in Jefferson County, Wisconsin, a county that is neither urbanized nor on the agricultural margin. It is a typical farming community with some fine lakes and streams in need of protection. In this county the unique feature is the "conservancy district," which consists of a strip of riparian land, rarely extending more than a mile from the stream or lake shores. In these districts agriculture, forestry and single family residences are the only permitted uses and all commercial uses, including bill-boards and even tourist camps, are excluded. Residential uses are subject to height and lot area regulations. A small forestry zone excludes agriculture and business uses primarily and a few uses are prohibited in the agricultural district.[13]

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[12] Wehrwein, G. S., and J. A. Baker, "Relocation of Non-Conforming Land Users of the Zoned Counties in Wisconsin." *Jour. of Land and Public Utility Econ.*, August 1936.

[13] Albers, J. M., "New Uses for County Zoning: The Jefferson County, Wisconsin Ordinance." *Jour. of Land and Public Utility Econ.*, Nov. 1938.

Two other features should be mentioned which are not confined to any particular district but are universal for the county in the towns which have approved the ordinances. Set-back lines have been established on all highways and no building adjacent to lakes and streams can be built or altered with the basement floor below the high water mark. The latter is an experiment in flood plain zoning and rests on the section of the enabling act granting authority to the county board to regulate trades and industries, the location of buildings within areas riparian to natural water courses, channels and streams. This section of the ordinance is an attempt to keep structures out of the path of waters. Since it is not retroactive except that buildings may not be structurally altered, it will not affect existing buildings. However, as old structures depreciate or become obsolete and new structures cannot be legally built in the flood zone eventually the entire area will become devoid of buildings. This offers suggestions for land use restrictions in watersheds in both rural and urban areas. The objective could be hastened by judicious purchase and relocation of non-conforming uses. With human beings, residences, domestic animals and the more expensive property entirely out of the way of floods the other uses within the flood plain can easily be readjusted to reduce damages to a minimum.

Another form of land use restriction receiving attention is the regulation of the margins of the highway. Roads and streets are created at public expense but the abutting property is immediately affected. The better the highway the more accessibility it gives to the land owner on adjacent land either by giving him a short cut to a market or by bringing thousands of customers past his door. This induces the building of business places, taverns, bill-boards, and junk yards on land otherwise rural. The result is that one of the purposes of the highway, namely for recreational travel, is seriously impaired. Besides, whenever the highway is lined with business places, forcing cars to park on the right-of-way, and causing cars to enter and leave the stream of traffic, health and safety are involved. Some authorities believe that since the state builds the highways it should take direct control over the margins or by purchase of easements obtain the right to do so. Others feel, and so far this has been the general practice, that this should be done by local zoning ordinances and set-back lines. Zoning can restrict business uses to given areas and the set-back lines can keep

parking off the right-of-way. This has been done successfully in several states, notably California.[14]

The above examples indicate the progress that has been made in our thinking and accepting the principle of land use control. A zoning enabling act shows that the people of a state are willing to permit localities to control the use of land within the provisions of a general act. An ordinance under the enabling statute is an indication that in a given locality the people are ready to live under restrictions which they have imposed upon themselves and their neighbors, but the test of any democratic form of land use control is the administration of that control.

One of the difficulties with rural zoning is the lack of administrative machinery. Counties with suburban zoning are usually wealthy counties and have building permits and codes and money enough to pay for inspectors. This, however, is no guarantee that the regulations are enforced adequately. It is interesting that Jefferson County is going to require building permits as a means of checking the enforcement of its ordinance in the entire county, including the purely agricultural areas, but inspection will be necessary to enforce building set-back restrictions and check up structures in flood plains and the location of tourist camps as well as the building permit ordinance.

In the second place, it is important to have boards of adjustment to take care of special exceptions to the terms of the ordinances but in harmony with their general purpose. On the whole the enabling acts have not made adequate provision for these boards nor have counties availed themselves of the opportunity. One reason is that the functions of the boards and their operations have not been understood and appreciated.

All of these administrative activities make some demand on the treasury and the counties on the agricultural-forest or grazing margins are least able to provide adequate machinery. Because building permits are not required, and undoubtedly are unworkable, a substitute in the form of a list of legal non-conforming users has been provided for. Machinery for detecting and handling discontinued uses has been set up, using already established offices. That this is not altogether satisfactory is to be expected. One reason is the short term of office of the county board of supervisors

[14] "Is Highway Zoning a Success?" *American Nature Association Quart. Bull.* July 1938. "Highway Zoning" in the *Roadside Bulletin*, June 1937.

and of the county officials charged with administration and enforcement of county ordinances in general.

Finally, the essentially democratic safeguards of local approval and administration are not conducive to 100 per cent enforcement. However, if it is any consolation to rural planners they can find abundant solace in the violations and lack of enforcement found in the cities which should have adequate machinery to enforce their ordinances. The greatest achievement to date is still the fact that people who 20 years ago were in the midst of an agricultural land boom and antagonistic to forests should reverse themselves in a decade or so and be willing to vote land use controls which exclude agriculture from one-seventh of the state and dedicate this restricted area to forests and recreation.

Zoning, however, is inadequate to meet certain situations. In the first place it cannot be made retroactive; in fact, some of the enabling acts distinctly say so. The Georgia and Pennsylvania enabling acts, however, permit the ordinances to provide for the termination of a non-conforming use within a specified time or within a sufficient time to allow for the recovery or amortization of the investment of the "non-conformer." This is fairly simple where structures are involved but how far this can be applied to changing an agricultural practice in the interests of soil conservation or to a complete shift to forests remains to be seen.

In the second place, zoning can set up only broad classes of land uses within fairly large areas sufficiently uniform to meet the test of equal treatment of all land within a district. It has not been used in rural zoning to prescribe forestry regulations in a forest district nor to interfere with the practices within the line fence of a given farmer. This perhaps is one of the chief difficulties in applying zoning to the farm-grazing frontier where the line between the two uses cannot be drawn with the same sharpness as on the farm-forest fringe. This task the Soil Conservation District is prepared to do.

Soil Conservation Districts have provided a new power to an old form of land use control. The irrigation, levee, drainage and other districts had the authority to force a recalcitrant individual into an organization especially created for the reclamation of land and make him pay his share of the costs through the use of the taxing power. The Texas Wind Erosion Districts do not have the taxing power, however, but have the authority to construct improvements and maintain facilities which arrest or prevent erosion on private

land and do this at the expense of the land owner collectable in the form of taxes up to the benefits received. This is land use regulation after a fashion; the owner may prefer to prevent erosion rather than have the district control it for him. To do so he may have to change his farm practices and cropping system.

On the other hand, the Soil Conservation Districts based upon the model federal law do not have the taxing power.[15] However, the supervisors of the district may formulate regulations which actually prescribe the manner of land use within the farm. Upon approval of the designated number of land occupiers these regulations become binding on all land in the district. If farmers fail to carry out the rules the supervisors may enter upon the land of a non-cooperator and bring his operations in line with the regulations and charge the costs to him as taxes. It will be noted that the individual has ample power to express his wishes before the district exercises control over his land. While the district may perform educational functions or serve as the medium for state and federal subsidies for soil conservation its power to regulate and control the use of land remains inactive until the supervisors have formulated the regulations and the people affected have approved of them by referendum. The progress in this form of land use control is indicated by the fact that by November 15, 1938, twenty-six states had enacted enabling statutes, 102 districts organized in 23 states embracing 54 million acres, an area larger than the state of Idaho. This is a phenomenal record. District organization began only a little over a year ago. Land use regulations have not been enacted with the exception of one district in Colorado. This is to be expected and as it should be. Farmers must have time to gain experience with voluntary action before taking this step.[16]

DISCUSSION BY F. F. ELLIOTT

United States Department of Agriculture

In commenting upon Dr. Wehrwein's paper I shall have little to offer in the way of direct criticism of what he has said. My comments rather will be directed more toward phases of the problem not covered by him—and this primarily with the aim in view of presenting a somewhat more balanced discussion of control than it seems to me he has given.

Although, at the beginning of his paper, Dr. Wehrwein recognizes that

[15] In Colorado districts are authorized to levy special assessments against lands. D. H. Allred, "Districts for Soil Conservation," *Jour. of Land and Public Utility Econ.*, Feb. 1938.

[16] Private correspondence with D. H. Allred, Soil Conservation Service. December 14, 1938.

public control of land use may take one of three forms: (1) administration of lands in public ownership, (2) control of private lands by means of grants or subsidies, and (3) control through exercise of the police power; he immediately disposes of the first two, and confines his discussion almost entirely to the third. In his discussion of the use of the police power, furthermore, he centers attention primarily upon zoning, although there is some incidental discussion of Conservation Districts at the end.

In choosing to make zoning the central theme of his paper, it seems to me Dr. Wehrwein has unduly restricted his treatment of the problem of public control of land use in the United States. In doing so he gives zoning, by implication at any rate, a prominence as an instrument of control which neither its demonstrated effectiveness nor its probable potentialities seem to justify.

Zoning, to be sure, has long been recognized to be a reasonably effective device for guiding settlement and for delimiting broad categories of land use in limited areas such as in certain of our sparsely settled, cut-over and acute problem areas. But zoning has never been considered, nor has yet demonstrated, that it is a particularly effective instrument of control in our major farming and ranching areas, where, obviously, the problem of land use is of greatest national concern.

That it is inadequate to meet certain situations because of its non-retroactive character and other features is recognized by Dr. Wehrwein when he says, "Zoning can set up only broad classes of land use within fairly large areas, sufficiently uniform to meet the test of equal treatment of all land within a district. It has not been used to prescribe forestry regulations in a forest district nor to interfere with the practices within the line fence of a given farmer." Zoning then is more of a negative than a positive device for land-use control. Obviously, if remedial measures are to be effective, for example, in controlling erosion or maintaining fertility on individual farms, it will be necessary to go within the fence lines of the farms, and to differentiate sharply between certain land-use practices which will control as against those which will not.

Apart from the difficulty of drawing a sharp line of demarcation between different land uses and practices is the additional problem of controlling the non-conforming use. If the non-conforming use, as has been stated, can be terminated only after a sufficient time has elapsed to allow for the recovery or amortization of the investment of the non-conformer, then we cannot expect to make very rapid progress toward control of land use by this device.

But, as Dr. Wehrwein correctly points out, there is another approach to the application of the police power which has come into the picture in recent months and which gives promise of meeting some of these problems. I refer to the Soil Conservation District. Under this new institution, it is possible not only to control land use in a democratic manner, but also to give effect to the regulations by empowering the Board of Supervisors of the District to enter upon the land of the non-conformer and bring his operations in line with the democratically approved regulations and charge the costs to him as taxes. Thus, under this device it is probably possible to do all the things that can be done under zoning ordinances as well as many more much-needed additional things.

But ultimately the degree of control of land use which can be effected, either through the Districts or through zoning, rests upon the extent to which landowners or operators are willing to vote land-use regulations upon themselves. This will be determined in part, of course, by the degree of their feeling of stewardship in the land and by their understanding and comprehension of the purposes and ends to be served, but in part also by their expectation of benefits to be gained in relation to the cost to themselves of attaining them. Experience likely will demonstrate that this latter consideration will weigh rather heavily in their calculations. It, in fact, probably will prove to be the primary determining factor in many instances.

This leads up to what has long seemed to me to be one of the principal weaknesses of the police-power approach to the control of land use. In a democratic society such as ours it is possible to impose and enforce only those regulations which public opinion will support. If regulations are such as to be extremely onerous to the individuals affected, or to entail immediate financial sacrifices of some magnitude, even though it may mean gain in the long run, the chances are the regulations will be voted out or go by default through non-compliance. If, however, some provision could be made to compensate the individual for a reasonable share of the sacrifice involved in getting onto the new basis, it would appear that this difficulty might, in large part, be overcome.

A combination of the subsidy or payment approach and the exercise of the police power thus might, and probably would, prove to be a more effective approach to control of land use than will either device used alone. The complementary or supplementary effects of these devices, when used jointly, woud tend to lessen the severity of the impact of the compulsory feature of the police power upon the individual and at the same time provide a means of gradually terminating the subsidy.

Up to this point I have attempted to point out the questionable applicability of zoning as an instrument of control of land use except in certain restricted areas and also have called attention to some of the difficulties involved in using the police power approach as a general device in land-use control. I should like now, in the brief time remaining, to call attention to other approaches that might be, or have been, used in getting at the same problem. Many of these certainly will prove equally as effective if not more so than will the exercise of the police power. Among these I shall have time to mention only a few of the more important such as conditional grants and benefit payments, taxation, credit, public purchase and resettlement, landlord-tenant measures, grazing associations and economic stabilization.

Brief mention already has been made of conditional grants and benefit payments. This approach has the big advantage of flexibility and of persuasive inducement. The principal problem involved is that of insuring effective expenditure of the money in terms of the results attained. There also is, of course, the perennial problem of justification for the subsidy. This instrument of public control has been quite prominent in the public eye recently and has taken two forms; the making of cash grants or payments for meeting specified conditions which is the approach used by the Agricultural Adjustment Administration, and the supplying of materials

and, to an increasing extent, the supplying of technical services which is the approach used by the Soil Conservation Service.

With respect to the public finance approach—through taxation and credit—there are a whole string of suggestions, ranging on the one hand from a general revision of the whole tax structure so as to lighten the tax burden on real estate, to a differential taxing of lands in different categories on the other. Credit is also recognized to be a powerful social instrument in regulating land use.

Public purchase, rehabilitation, and resettlement are still other measures of control that should be mentioned. In some of the worst problem areas, in fact, they are about the only practicable approach to use. Selective purchase in other areas also may be very effective in helping to supplement other approaches and to block up non-economic into economic units.

The grazing association is another new instrument of control that has recently been developed. The functioning of this new institution for the improvement of land use rests upon private contract rather than upon invoking the police power of the State. This type of approach is already filling a long-felt need for an effective procedure in grazing land control and management in a number of the Western States. Recently, Cooperative Associations organized under the cooperative laws of the respective states are proving to be effective in handling blow-hazard land in the Dust Bowl of the Southern Great Plains.

There is also the possibility of improving land use through action in the landlord-tenant sphere. Our present leasing arrangements are notoriously bad in this respect. Remedial action likely will have to come in one of two ways; either through state legislation in regulating landlord-tenant relationships or through education.

Over against these direct public measures for control of land use is the need for general economic stabilization. So long as prices and income generally fluctuate over as wide a range as they have since 1910–1914, many producers are going to find themselves forced into exploitive systems of farming and away from rational consideration of the interest of the community as opposed to the immediate interest of the individual.

In conclusion, I would like to add a word about public administration. Dr. Wehrwein says, "it is always within the power of a public landowner to do with the land as it pleases." While this technically may be true, any close scrutiny of our past land policy or administration of public lands will indicate, on the contrary, that the Government actually can do only what people in the locality most affected will permit it to do. The Forest Service, for example, probably has as great a degree of control over the national forests as any other agency administering large areas of public lands. But in a recent article an Associate Chief of the Forest Service estimated that the current carrying capacity of ranges on the national forests were 30 per cent below potential productivity, and further indicated, "recovery could be hastened by reducing the number of livestock grazed, but heavy reduction would place an extra burden on an already sorely pressed industry." In short, in any consideration of public control of land use the nature or manner in which the democratic process works must always be taken into account.

HOW FAST SHOULD COOPERATIVES GROW?

H. E. Babcock
Grange League Federation

Two more or less opposing programs of cooperative development invite the interest and support of farmers today. One program is based on the idea of controlling through cooperatives all of the business in a given area of marketing or purchasing service. The opposing program is founded on the idea of using cooperatives as pace-setters in the fields in which they operate.

My experience, as some of you know, has been gained in the management of a farmer-owned and farmer-controlled cooperative run to set the pace in the performance of purchasing and later marketing services for farmers in the states of New York, New Jersey, and Pennsylvania.

The first fundamental which must be recognized when a cooperative is used as a pace-setter is to operate it in such a manner that it improves the performances of the services in which it engages. In other words, farmer-owned and controlled cooperatives must never hold umbrellas over inefficiencies. Unless they can be used to force better rendering of services in the fields in which they operate, they fail as pace-setters and unless a cooperative gives early promise of moving out to the head of the pack and pulling it along at a faster pace, it should be liquidated; it is the kind of cooperative which should never grow at all.

The practical question is how much business must a cooperative do in order to be able to set the pace for efficiency and service in what it does. Experience alone can work out the proper answer. On one thing I am sure, however. It is that the percentage of the total business in a given field which a cooperative must handle in order to set the pace will vary widely from time to time. This means that a cooperative always should be so built up that it can contract as well as expand the amount of business it handles. Now to contract the activities of a cooperative is one of the most difficult problems in cooperative management. Almost every commitment which a cooperative makes in building up volume of business works against cutting down that business. Nevertheless, I remain very firm in my conviction that if a cooperative is to function effectively as a pace-setter, it must be so built up that it can retreat from handling business as well as forever forge ahead in volume of activities.

Some of the ways by which a cooperative may keep itself in position so that it may retreat from volume of business are these: It can and should be very careful in its commitments for fixed charges such as interest on borrowed money invested in real estate. It should be careful about making long-time contracts for such expenses as rent, advertising, and salaries, and above everything else, commitments for handling patronage should be made with care.

Even if a cooperative is careful in all these particulars, it will find it extremely difficult to cut down on the size of its operations because of the problem of employed personnel. For this reason, I favor some percentage of the employees, including executives, of a cooperative being hired on a basis whereby they understand when they come into the organization that they may have to take furloughs from it.

The point which I wish to make is that a cooperative, operating as a pace-setter, cannot morally forsake its function, a function which presumably serves the best interests of many people, just because it wishes to keep jobs open for a relatively few employees.

Furthermore, no cooperative, has any moral obligation to handle patronage beyond the point to which that patronage enables the cooperative to operate at maximum efficiency. Because I so thoroughly believe that a cooperative which does not set the pace is a liability, I feel that all cooperatives should be so directed and so managed that they will refuse patronage when to handle it means losing their position as leaders in effectiveness in the fields in which they operate. When patronage has to be refused, priority rights should be recognized for those members of a cooperative who have proven themselves good cooperators. Successful cooperatives face such a very real danger when they undertake to handle too much patronage that I am in favor of a patronage waiting list whenever a cooperative can be so maneuvered that one can be established.

Direction of Growth

Any adequate answer to the question of "How Fast Should Cooperatives Grow?" must take into consideration the direction of growth. I have already established the principle that, in any given field of service, a cooperative should grow to a point where it is if possible the most efficient operator in that field but that it should not grow beyond this point.

To do an adequate cooperative marketing or purchasing job for farmers, however, requires cooperative activity in many fields of service. For example, in the field of cooperative purchasing, farmers must have cooperative action in the field of retail service to insure such service being run efficiently and in their interest. In addition, they must have cooperative action in the wholesale purchasing and processing of farm supplies, in the research which develops specifications, and where the door is open as is quite often the case in the field of transportation. Cooperative activity in the field of finance is now accepted as a matter of ordinary procedure.

These demands upon a cooperative require lateral extension of its services. By this I mean that the cooperative extends its services from one field of marketing or purchasing service into the next related field until there is cooperative service available to set the pace in every operation which necessarily takes place in moving goods from producer to consumer.

Rate of Lateral Growth

I have much more definite ideas about how fast a cooperative should grow in a lateral direction than concerning the size to which it should grow within any particular field. As I have said, the answer to this question can only be determined by experience. When it comes to the question of the rate of lateral growth, however, while experience also furnishes the answer, it is a definite one.

Farmer-owned and farmer-controlled cooperatives in my opinion, whether they are engaged in cooperative maketing or cooperative purchasing should grow into a complete performance of all the marketing services concerned with the goods they handle just as rapidly as possible.

This means that if a cooperative is set up to purchase farm supplies that it should set up machinery to develop specifications, enter the field of wholesale purchasing and processing, join a bank for cooperatives, seriously consider operating its own truck lines or boats, manage its own warehousing, and conduct at least part of its own retail service. Furthermore, applying the principle laid down at the beginning of this paper, it should so enter the above outlined fields of activity that it can expand or contract within them and if it cannot set the pace in any one of them retreat altogether from that field.

Avoiding the Squeeze

I have come to the above conclusion in the hard school of experience and from watching other operations which have failed to apply this principle.

It is an ever recurring phenomenon in the history of farmer-owned and farmer-controlled cooperatives in the United States that they enter a field of cooperative service with high ideals and high hopes. For a comparatively short time, because of the high charges made by competitors rather than their own efficiency, they set the pace in this field. Then something happens. Let us see just what it is that does occur.

Take the example of a cooperative which is set up to serve its patrons with warehousing. It enters this field of business activity. Warehousing rates are high. The cooperative cuts them and attracts patronage. Patronage comes and builds up the cooperative's overhead and other costs. Then competition cuts its warehousing charges to meet the cooperative. A little while later there is a further cut. Almost always this additional cut, which is usually severe enough to throw the whole warehousing operation into the loss column, is made by some competitor who has operations in fields in which there is no cooperative competition. What has happened is this: The competitor of the cooperative, having figured the whole play out, resigns himself to take a loss in rendering warehouse service to his farmer customers because he figures he can pick up this loss by slightly increasing the charge he makes in some processing field or in a transportation service which he also conducts. Usually his strategy works. The cooperative is in effect caught between bases and forced out.

The point which I wish to make is that the only possible cooperative defense against such a squeeze play is for the cooperative also to be engaged in setting the pace in those other fields of marketing and purchasing service in which its competitor is engaged. Then if the competitor to cover his losses on warehouse service increases his processing services or his trucking charges, the cooperative too will be able to recoup its losses on warehousing. What actually happens under such circumstances, however, is that the strategy is never attempted by the independent operator because to do so does not work out on paper to be sound procedure.

To summarize: (1) If a cooperative engages in but a single one or two of the many operations which are necessary to render complete

marketing or purchasing services for farmers, it should grow into a pace-setter in the field or fields in which it operates just as rapidly as possible, but that it should not grow beyond this point. There is always a point reached when a cooperative has just the volume necessary for maximum efficiency. Then is when it should stop growing. (2) Farmer-owned and controlled cooperative purchasing and marketing services, when projected into any one field of marketing or purchasing activity should then as rapidly as possible extend their operations into related fields until there is cooperative service available to farmers in each one of the many fields of service needed to make a particular commodity available to a user at the time, place and in the form which best suits his convenience.

I desire to emphasize that any program of cooperative activity which farmers may take up in this country should be a flexible one. With cooperatives, farmers should aim to enter many related fields of purchasing and marketing service rather than to attempt monopolistic control in any one field. Furthermore, they should enter these fields solely for the purpose of speeding up efficiency in them rather than with the idea of building up cooperative monopolies.

It is a fundamental principle with me that a cooperative, even when it has been successful in forcing the pace in a given field of business activity should be withdrawn from that field or its functioning largely cut down whenever it is unable longer to hold its place as a pace-setter. This definitely means that in the field of agricultural marketing and purchasing I regard cooperatives as a means to an end, rather than an end in themselves.

The Value of Competition

Successful cooperatives in this country owe a great debt to their competition. I hope that they may never be free from competition. I hope that the day will never come when the American farmer may not have a situation in which his successful pace-setting cooperative is not continually challenged by hard-driving competitors trying to render better service for less money.

Such a situation is, according to my philosophy, truly American. It tends to force the development of efficient, far-seeing leadership in the cooperative movement. Above everything else, it does not block the American farmer from receiving those contributions to his welfare which an intelligent, ambitious business leadership may

well provide and has often provided in great abundance in the past, particularly when this leadership has been forced to toe the mark by cooperative competition.

Too Successful Cooperatives

Furthermore, as a farmer, I have a distinct horror of ever finding myself in the shadow of a cooperative, even though I may own and control it, which is dead on its feet. Nothing is so likely to bring about such a condition in the operation of a cooperative as for it to eliminate all effective competition and to become secure in its field through monopolistic control of that field rather than through competitive control of it.

It becomes just too much to ask of the directors and top executives of a monopolistic cooperative to keep its employees on their toes in such a situation. They just can't do it. So, having stated one negative answer as to how fast cooperatives should grow, which was that they should not grow beyond the point of greatest efficiency in what they are doing, I also want to add another negative answer which is that even though they may do so without loss of efficiency, cooperatives should never become monopolistic in the fields in which they operate.

Spiritual Value of Cooperatives

I can well imagine that you have been disappointed in this paper coming as you do largely from academic circles. You have expected me to answer the question "how fast should cooperatives grow" with answers like "at no greater rate than an informed membership can be built up," "only so fast as trained men are available for management," or "cooperatives should grow according to the ability and willingness of their patrons to finance them."

I have not, I assure your, overlooked making these answers because I do not regard them as important and vital to any sane planning for the development of a cooperative movement in agriculture. They are, however, answers you all know. You've chewed them over at sessions like this until they are pretty well frazzled. Therefore, I have preferred to go a little deeper and challenge the fundamental purpose of cooperatives and indicate how I think these purposes may best be carried out.

Before I close this paper, however, I want to discuss an angle to the question which economists very seldom consider. For want of a better term, I shall call it the spiritual angle.

Men farm in this country, as I see it, largely because of hope. They hope for yields and they hope for prices. Too often of late years, however, have their hopes for both been disappointed. Farmers need additional things to hope for to keep up their spirits, their courage, and their interest in life. The cooperative movement in American agriculture supplies farmers with a new hope and with a new challenge. With cooperatives, they can and should enter every field of business service connected with the marketing of agricultural products and the purchasing of farm supplies. They should not enter these fields with cooperatives to dominate them but to set the pace in them. They should not confine their cooperative activities just to those services which are nearest to the farm but they should push them into related fields, clear across the board, from producer to consumer.

Just stop and think a moment what such a conception means to a farm boy. When he is tired and hot and dusty, cultivating a crop which he knows won't bring any money, if he is a member of a cooperative, he still can raise his eyes above that narrow horizon and, as he forces his weary body to a disheartening and distasteful task, he can dream of what he and his fellow farmers may be doing or can be doing together in transportation, warehousing, processing, packaging, advertising, and retailing the goods he produces to the end that the crop failure will be a little less severe and the price it brings a little better than it would have been without cooperatives setting the pace in the marketing services. Such a boy can feel himself a man among men dealing with problems on a wide front and hopeful of solving some of these problems as well as of growing a better crop and getting a better price for it.

My final answer to your question is that cooperatives must grow fast enough so that they shall continue to supply the American farmer with another hope of maintaining his place in society.

DISCUSSION BY MARVIN A. SCHAARS

University of Wisconsin

We can agree with the general viewpoints expressed by Mr. Babcock. These are the results and convictions derived from a long practical experience in the affairs of one of America's largest and successfully operated cooperatives. To the extent that experience is a good teacher, his remarks carry much conviction.

We would all agree that it is better for a cooperative to start operations on a conservative scale and on a sound foundation than to expand too widely at the outset. Like any business, it is better to learn to walk before

beginning to run. Back-tracking and retrenchment under any circumstances are always difficult, yet, as was correctly pointed out, a cooperative's organization must be kept flexible enough so that both, retrenchment and expansion, can take place. We do not find, however, in Mr. Babcock's paper any suggestion as to when such retrenchment or even liquidation should take place, except in broad and severe generalizations. No doubt, these would be differently interpreted for different commodity sales organizations or purchasing associations, for local and regional companies, and for associations having had varying years of experience. Most of us know of a creamery, cheese factory, packing house, or a cooperative retail store which for sundry reasons was no particular pace-setter for a number of years, but which because of a new management, new directorate, or new location of business became a real community asset. Its demise at an earlier date, dictated by the fact that it gave little promise of being a pace-setter in its beginning, would result in an irretrievable loss. Certainly, there are times when liquidation becomes a necessity—for example, when a product is no longer commercially produced in a section (sugar beets in many parts of Wisconsin), or when a new mode of transportation such as trucking displaces the type of service which a rail-shipping association provided earlier, or when a town virtually ceases to exist when industry migrates so that a cooperative store no longer has adequate patronage. No doubt the time element is an important factor to be considered before such decisive judgment concerning liquidation is made, because most likely there are different time standards for different types of organizations.

I am in hearty agreement with the thought that a cooperative has no moral obligation to handle everyone's patronage when such handling reduces the efficiency of the company. Some may challenge this view on the grounds that a cooperative is supposed to be a democratic institution open to all who desire its services. This idealism, however, is justifiable only if it meets the pragmatic test of efficiency, for I see no justice in reducing the efficiency for the existing membership of a cooperative just to serve the newcomers. Closing a receiving station and thus denying service to a minority, for example, may be the soundest business procedure if the majority benefit thereby.

Likewise, I am disposed to agree with Mr. Babcock that a cooperative has no *moral* obligation to retain employees, whether they be the humblest unskilled handymen or the top executives, but from sheer practical expediency it is evident that certain replacements can be made much more easily than others. I do not believe it would be a good policy from the standpoint of personnel management to discharge key men in order to economize on costs of handling a particular year's crops when the volume may be low for reasons not attributable to the executives. Costs of operations should be considered from a long-time point of view involving a number of years rather than only from a short-time or season to season view. How can an efficient personnel, especially in the key positions, be maintained if the fear of discharge due to other causes than inefficiency haunts it? It may be better to have temporary higher costs retaining a skilled executive force, then to have lower costs for a short time only to be unprepared for effective

handling of the business when conditions become righted again. Such action will not jeopardize the pace-setting of a cooperative considered from the long time point of view, and will expedite rather than retard its rate of growth.

I also find myself in agreement with Mr. Babcock's viewpoint that vertical integration—he uses the term *lateral extension* which suggests horizontal integration, but he describes vertical and circular integration—should take place just as rapidly as possible, not only to avoid the squeeze, which he speaks of, but to effect greater economies in distribution and processing than can be achieved by operating in only one step in the marketing channel; to become liberated from the dependence upon as well as control by anti-cooperative agencies; and to widen the sphere of cooperative action. Some of the largest gains from cooperative activity are to be derived from intelligent integration of marketing. Certainly, there are sufficient illustrations of this by both the sales and purchasing associations to prove this contention, as well as by leading private businesses in all parts of the country.

With regard to his eulogy of competition, I find myself at variance. I am disposed to believe that (1) all kinds of competition are not compatible with efficiency for all stages of business development nor for all types of business activity (witness inefficiencies in competitive assembling and distribution of milk); (2) all competition is not eliminated even when a cooperative handles all of one kind of product which may be produced or which a purchasing association may distribute (oranges still compete with tomatoes and grape fruit); (3) the principles of large scale business affected by decreasing costs when fully applied outweigh the advantages of a division of the business between competitors with their possible consequent higher cost; and (4) there are numerous indices and ratios which an alert management can examine that can take the place of the spur which competition provides.

Possibly the type of monopoly which Mr. Babcock abhors is the kind which was preached by demagogues in the early 1920's. If, so I agree with him. But if we accept the statement that the essence of monopoly consists in such control over the supply of a good as to give control over its price—then it becomes evident that a cooperative which has achieved a position as pace-setter is already a monopoly to a certain degree. Monopoly is a matter of degree, not necessarily of absolutism. Certainly, whatever monopoly might ever exist in the sale of farm products or in the sale of farm and household supplies by purchasing associations will be only temporary and local, and need not be a factor to hold back the rapidity or extent of growth of a cooperative.

The psychological benefits of membership in a cooperative that can buoy up the hopes and aspirations of a depressed agricultural class can be derived from an integrated and pace-setting cooperative as Mr. Babcock suggests and not from one for which a member has to be apologetic. However, I doubt whether it makes any difference to an oppressed member whether the position of leadership which his cooperative holds is due to superiority in a field of competition or whether it holds dominance by virtue of having eliminated its erstwhile competitors.

ADAPTING FARM MANAGEMENT RESEARCH TO NEW OPPORTUNITIES

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The opportunities referred to in this paper are not strictly new. They center on the needs for farm management research which have developed since 1929. There will be general agreement that during this period the "demand curve" for the farm management product has shifted significantly to the right. As a result we have calls for new types of farm management analysis, and for changes in emphasis on old lines of work; but most important of all, new channels have been developed for application of the results of our research work—in other words, there is a new "market outlet" for the product.

I

Research work in farm management grew rapidly in the period from 1905 to the beginning of the World War. Many of the research procedures in use today were evolved at that time. In this period of agricultural and industrial expansion it was natural for farm management work to concern itself largely with changes in organization and operating practices which would tend to increase farm incomes under the prevailing price and production conditions. While the rapidly rising prices of the war period induced more intensive use of resources and expansion on the extensive margin, this accelerated upward adjustment was relatively easy.

II

The maladjustments associated with the post-war deflation emphasized another set of problems, even from the standpoint of the farmer acting as an individual. Changes in farm organization or operation, or both, frequently were necessary to meet certain pressing financial obligations. Farm management studies which showed the prospects of higher income from a change in farm organization, assuming normal conditions, were of limited use to the farmer who had no cash or credit available to make that type of change, and who might be forced by financial circumstances to shift in a direction which he knew in advance was contrary to his long-term interests. Two other questions were often in the forefront. Should the

farmer or members of his family seek to supplement by outside employment the meager income from the farm? Should they stay in the business or sell their equity, or even abandon it, and go into other occupations? Previous research work in farm management had shed altogether too little light on these important questions. The need still exists for a more realistic attack on these problems.

With deepening depression and increased farm foreclosures the "involuntary land owners" became an important group in many areas. They had another set of questions which farm management workers were not too well prepared to answer. (1) In view of the national outlook for agriculture, what were the long-term income prospects from farming in these areas? (2) Should they liquidate immediately, or arrange to repair and rent farms until economic recovery increased land values? (3) If the latter, how much new investment could they afford to make on a farm of a given type, and (4) what type of leases and supervision should they develop?

There was need for a new emphasis of these questions. It is almost a new field of work; and while it has been cultivated to some extent in the last five or six years, there is much more that could be done if time and funds were avaailable. We should also concern ourselves with the changes which are injected into the agricultural production pattern when a part of the managerial decisions are made for the operator by the "involuntary land owner."

III

Then came the development of the "action programs" of both new and old State and Federal agencies. These were a recognition that a broader attack was needed on some of the major maladjustments and defects of our agricultural economy. As far as need for farm management research is concerned, the most important Federal agencies are the Farm Credit Administration, the Agricultural Adjustment Administration, the Farm Security Administration, and the Soil Conservation Service. It is difficult to appraise either their actual or potential effects on farming, but some measure of their importance is gained by noting the number of farms actually served. The FCA has real estate loans outstanding on over 800,000 farms, not to mention the short-term loans, and the indirect intermediate credit and cooperative loans. A little more than half of the 6.3 million American farms are cooperating directly in AAA programs. The FSA has over 500,000 rehabilitation loans outstanding,

not including some 400,000 grant cases. Over 300,000 of the loans have been made on the basis of individual farm plans. The Soil Conservation Service, on a purely demonstration basis, has developed individual conservation plans for about one per cent of the farms in the country.

Naturally there is some overlapping in the farms that these agencies serve. The important point is that the great majority of American farms are directly affected by one or more of the action programs, and that adaptations in organization and operation are made to enable participation.

IV

The immediate challenge to farm management research workers is the need for studying the field of public action in its relations to the individual farm. (1) What kinds of public programs are needed to assist farmers in meeting the problems in a given area? (2) If present programs do not fill this need, what changes or modifications would be necessary to accomplish the purpose? (3) What changes can be made in program application more readily to accomplish the objectives sought? (4) How can farmers best adjust themselves to the requirements for participation? (5) How are present and contemplated programs likely to affect given sizes and types of farms in specific locations? (6) What will be the probable magnitude of change in farming as a result of a given program?

All these questions involve farm management analysis. Answers are of vital importance to program administrators as well as to the men who wear the overalls on the farm. Ill-conceived institutional policies and programs may be just as harmful to farmers, and to society, as unregulated action by individuals.

Perhaps most of us will say that we do not have the requisite data for analysis upon which to base adequate conclusions. This is altogether too true, and we must bestir ourselves to get more data of the kind that will really help to get more nearly correct answers; but we must not forget that the Farm Credit Administration continues to make loans and to foreclose on delinquent ones, and the AAA makes payments for production adjustment and for conservation all the while that we are collecting data and studying the problem. The administrator is impatient for results, but the researcher is not equipped to pass competent judgment without some study of the situation. Perhaps we can contribute most by making coura-

geous and discriminating use of the data that we have, checking it with the judgment of practical farmers, and offering the results as a tentative conclusion until we can marshall more reliable evidence.

Service in this sphere requires a broader view of the problem than helping individual farmers to make more money. Farm management workers cannot afford to throw overboard that responsibility. In fact, the aim of an action program is to improve the economic position of the farmers which they serve, but the point is that we must also visualize the national production economic aspects and, in addition, the general welfare aspects of the problem.

The public program should be pointed toward adjustments that would develop automatically if economic and social forces were operating as freely and effectively as the classical economists assumed, but with the provision of adequate safeguards for the broader social interests. This includes due regard for conservation of soil resources and the economic effects of shifts in one area on other areas, and other groups in the population. If we can assist in pointing programs in this direction we shall be working toward the elimination of much of the so-called conflict between action programs and "good farm management."

In considering what constitutes "good farm management" the time seems to have arrived when we must also consider the types of adjustment that will bring the greatest security and stability of income for the total population in an area, as well as higher returns for the individual operator. For the middle term at least, this may mean policies that compromise the most efficient farming from the individual point of view in order to provide the best available opportunity for farmers that would otherwise be displaced, and for agricultural labor. A cooperative study recently completed in northeastern Montana indicates that, for a capable operator farming with tractor equipment, a minimum unit of 800 acres of crop land would be required to make efficient use of power and labor resources. If the size of the unit is considered on the basis of acreage needed to supply a minimum income of $1,000 for family living and for interest and debt payments (based on average yields and long-term average prices), about 300 acres of crop land, supplemented with some grazing land, would be required. But if we set even this acreage as the minimum-sized unit and assume no reduction in acreage of the present farms above that size, it would

mean a displacement of about half the farmers now operating in the area.

Before such an adjustment is seriously proposed two questions must be explored. First, are all farmers who would remain in the area capable of operating farms of this minimum size? Second, what are the other alternatives for the farmers who would be displaced? Over the longer term a considerable movement of farmers out of the area would probably be highly desirable, but as long as they cannot improve their economic position elsewhere perhaps it is "good farm management" to assist, if possible, in increasing incomes to farmers in their present locations, and to point out other opportunities whenever they appear on the horizon.

V

The orientation needed in a program of work to meet the new needs depends a great deal upon the work already under way in the various institutions. If State and Federal agencies had a comprehensive program of farm management research from which we could obtain reliable input-output data for all the important farm situations it would be relatively easy to make the special applications that are needed. Although much work of a background nature has been done, there is a tremendous job still before us. It consists of background studies and explorations in methodology, as well as of studies that apply to specific programs. Time does not permit more than the brief classification which follows:

A. Studies to provide a general background and approach.
   (1) Explorations in new fields; e.g., comparative advantage, technological developments and input-output relationships in specific enterprises.
   (2) General studies of current change; e.g., effects of new developments, cost and income series, and analysis of commodity production situations.
   (3) Regional adjustment studies which center on the basic adjustment problems of the area or region. An attack on a problem basis logically precedes the development of program details to facilitate the needed adjustment; e.g., what adjustments in farming are required in the southeast in view of the outlook for cotton; what sizes and types of operating units can be made self-supporting in the Southern Plains. Work of this type should be integrated with other approaches in such a way that area adjustment plans can be formulated and currently revised as new information becomes available. Through county planning,

or other farmer contacts, the judgment of experienced farmers should be brought to bear on the problem before conclusions are reached.

B. Research and planning for specific programs.
   (1) Prospective studies, providing information on probable effects of programs or explorations of specific problems; e.g., restoration land in Great Plains.
   (2) Continuous studies designed to measure effectivness and progress of programs, and to suggest changes.
   Full development of the general background studies will reduce the need for the special attacks on specific problems, but when such studies become necessary they should be built on the general background foundation.

C. Development of research methodology.

The basic problem in establishing a program of work of this type is to cover the field with a limited staff without the work becoming merely superficial. There seems to be no real solution, except to rank the work in the order of its relative importance, and to integrate the attack whenever possible. Often new work has been added to the old without much attempt at integration. This has been justified on the basis that the new work was of an "emergency character." However, if we can look forward to continuance of most of our action programs we must recognize that these agencies assume a part of the managerial responsibility, and if we want to study the management problem in its entirety we must now include in our scope of work the activities of public action agencies, "involuntary landowners" and others who now influence production decisions on farms in this country.

A partial solution to the problem of covering a large field with a limited staff is found in planning the work whenever possible, to serve the basic needs of several action agencies as well as the individual farmers in the area. This is implied under A3 in the above outline. In this way several agencies can pool their funds and man power to advantage. A study now under way in Nevada serves as an illustration. Nine different State and Federal agencies are cooperating in a range area study in the northeastern part of the State. A representative of the Division of Farm Management and Costs was requested to assume responsibility for coordinating the work. The study promises to yield valuable physical and economic interpretations which will serve as the basis for coordinated action programs in that area.

The action programs thus provide testing grounds for the con-

clusions we have reached. If we are hesitant about testing them under fire of this type there is perhaps some consolation in knowing that the action which would otherwise be taken has possibilities for even greater error. But fortunately an excellent safeguard is available, namely, to develop the conclusions and the program suggestions in cooperation with practical and experienced farmers of the area. The farm management worker then contributes data and tools for analysis, as well as a broad knowledge of national conditions. The farmers contribute the experienced judgment regarding adaptation of different proposals to the area in question. A balanced plan of adjustment should result. The county planning movement seems to offer real possibilities, not only as a means of combining "expert" and farmer judgments, but also as a procedure for applying the results of more intensive studies to farms with common problems located in different areas.

One relatively unexplored field is the relation of technological development to the need for agricultural adjustments in the different farming regions, and their possible effects on the structure of agriculture over a period of time. This is almost a virgin field and time permits only its mention here.

There is still much need for development of research technique. We have by no means reached the point at which we can set a certain machine in motion on a given problem and expect it to grind out the answer. A person with good judgment can do valuable work even with poor tools, but the results could usually be improved with better tools.

One rather evident weakness in our studies has been that we have not known to what extent we could generalize from our conclusions. Sometimes from choice, more frequently from necessity, our samples have admittedly included a disproportionate number of the larger and higher income farms; consequently, there has been little basis for judgment regarding other groups in the universe. However, there is perhaps equal danger in obtaining what is considered an adequate and representative sample of all groups and then applying conclusions based on the average of such a sample to farms that may have characteristics quite unlike the composite group.

An important by-product of the action programs is the data collected on individual farms. Tapping these sources of secondary data may wean some of us away from conventional schedule taking.

This will be fortunate because we will be more free to study farms on an informal basis, and to dig deeper into the problems on case farms representative of different groups in the frequency distribution. The AAA work sheets provide data for relating size of units and cropping system to natural conditions. They also furnish some basis for stratifying a smaller sample according to size of units and crop production. Records on rehabilitation clients give a detailed picture of one stratum of farmers too frequently neglected in farm management research. There is a real opportunity to work with the various agencies in making these secondary sources of data even more useful for analysis. Collection of primary data can then be planned to supplement the information available from secondary sources.

The new needs call for analyses of all significant types and sizes of farms. For instance, if we are to analyze effects of the conservation plans proposed by the Soil Conservation Service we need first to determine the effects on various classes of farms that differ significantly in their opportunities to benefit by conservation practices. For this purpose the more significant differences seem to be the following: (1) Physical resources, (2) size of farm, (3) type, (4) tenure, (5) indebtedness, (6) family labor, and (7) age of operator and his ability to make changes effectively. It may well happen that the adjustment prescribed would result in increased incomes in some situations, and in others reduce the income so drastically that adoption of the program is out of the question, unless farm consolidation is provided. As long as land is utilized by individual farmers the algebraic sum of the proposed changes for all farms gives little indication of the effects on individual farms, and is, therefore, not an adequate basis for a program. The probable area and national effects of the proposed changes must be built up from the effects that can be forecast for groups of individual farms which are sufficiently alike to have similar reactions to a proposed conservation program.

Thus the studies required for action programs involve a prospective as well as retrospective analysis. We must look forward to discover, if possible, the ultimate as well as immediate effects of the program, and then look backward to appraise the results as a guide to future action. Many farm management workers have hesitated to pass judgment on future effects, but planning action programs inevitably involves forecasting the effects. For that matter, so does

planning on the individual farm, with or without the action programs.

A closer coordination between all the workers in economics, and between them and the workers in the natural sciences, is also called for. There is special need for cooperation with the soil scientists. Much farm management work can be justly criticized for ignoring significant differences in the physical resources.

This paper has emphasized some of the new needs for the product of farm management research. The discussion is not intended as a complete inventory of even the new opportunities. It certainly does not imply that other efforts are not worthwhile. There is need for a well-rounded and integrated research and planning program, and for coordination and cooperation among the different agencies engaged in this work. The important thing to recognize is that an adequate and timely research program is necessary to an understanding of farmers problems and that such understanding is a first requisite for action.

SOIL PRODUCTIVITY RELATED TO FARM ORGANIZATION AND INCOME

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The Department of Rural Economics of Ohio State University and similar institutions in other states have been making studies of the incomes of Ohio farmers for over 20 years. From farm account and survey records of actual farms, it has become a regular practice to determine the financial status of farmers and groups of farmers from year to year. From farm account records it has been possible to set up rather definite and accurate standards of size of business, production efficiency and income which we have used to measure the efficiency of individual farms from the standpoint of farm organization and management. In recent years some new factors have come into the farm management picture.

The depression focused attention on the heavy depleting cropping patterns followed on some farms in an effort to maintain incomes. The "A.A.A." programs have directed attention to "depleting and conserving" crops and the relationship between them. The Rural Rehabilitation and Tenant Purchase programs have been concerned with both the farm organization and fertility maintenance on tenant farms and others in low income groups. The drouths of 1934 and 1936 have shown the need for conservation of the soil resources of the nation.

Until recently no exact measure similar to that in farm management had been developed by Agronomists to determine just what the effects of various cropping patterns and livestock programs were on the general level of soil productivity. At the time of the Regional Agricultural Adjustment study in 1935, standards were set up in Ohio for each crop showing the extent to which it depletes or restores fertility, the rate at which erosion on different slopes removes fertility and the effect of applications of fertilizers and animal and green manures on the balance of productivity.

Several questions have arisen as a result of this study with reference to soil productivity and farm management. (1) Is there evidence that farmers are not maintaining productivity? (2) Are those farms where fertility is being lost most rapidly those with lower incomes? (3) Are there cropping patterns in the state which fit into the types of farming found in the different areas which will both maintain productivity and incomes of farmers?

This paper is an attempt to bring to light some of the data recently gathered along these lines which will aid in answering these questions.

There is evidence in Ohio that the productivity level of the soils of the State as a whole is not being maintained. A study of crop yields over the past 60 years reveals that in spite of the widespread adoption of such improved practices as drainage, use of legumes, use of fertilizer, and the use of improved seeds, the average yields in the state have not improved correspondingly.

Higher yields on individual farms and at the Ohio Experiment Station indicate that the adoption of the improved practices mentioned have resulted in improved productive ability of the soil. Further investigation has revealed that organic matter is being reduced at a rapid rate in some cash grain areas of the State. Unpublished data furnished by Richard Bradfield clearly reveal this fact.

Inspection of these data reveals in the cultivated land:

A noticeable increase in weight of soil.

A decrease of approximately one-fifth in pore space and a loss of about one-third in the organic matter content of this type of soil. This is typical of a moderately large cash grain area of Ohio with a rather high percentage of non-resident landlords.

Observations indicate further that on some farms where a cropping pattern and livestock program is followed which is capable of maintaining the producing ability of the soil, yields have pretty largely kept pace with scientific improvements in methods of production and varieties, whereas on other farms where rotations run largely to grains and timothy hay marketed as such rather than through livestock, yields have constantly been dropping. It is common knowledge that certain crops such as grains remove fertility from the soil. Cultivated crops, such as corn or potatoes, because of cultivation and the greater susceptibility to erosion cause fertility to be lost more rapidly than in the case of wheat or oats. Most hay crops, particularly the legumes, restore fertility. Animal and green manures and fertilizer add fertility to the soil. The other major factor is losses due to erosion. From long time experiments the Agronomy Department of the Ohio Agricultural Experiment Station and Ohio State University have set up accurate standards indicating the effect of a particular crop or practice on soil productivity. Destructive factors are expressed as minuses and re-

storative factors as pluses. The net effect on a given farm being an algebraic sum of all of these factors times the acreage or quantities on the farm under consideration for one year.

To illustrate how this data work out in actual practice, let us take first a typical rotation from a cash crop and grain section of Western Ohio. To simplify the problem we assume that erosion is not a factor, that 400 pounds of (20 unit) commercial fertilizer is used in the rotation and no manure is available.

Rotation 1.

Corn (Husked from stalk)	Oats (Combined)	Wheat (Combined)	Mixed Hay	Fertilizer 400#
−1.75	−.65	−.75	+1.0	+ .3
			Net Effect	−1.85

This example probably represents an extreme in the grain section of Western Ohio. However, such a rotation exists on many farms in that section. The balance can be materially improved by lengthening the rotation using a green manure crop between oats and corn and by the use of legume hays.

Rotation 2.

Corn (Husked from stalk)	Oats (Combined)	Sweet Clover as Green Manure Crop	Corn (Cut)	Wheat (Combined)
−1.75	−.65	+2.5	−2.0	−.75
Clover	Fertilizer 400#			
+2.0	+0.3	Net Effect		−.35

Rotation 1, can be brought in balance by substituting alfalfa for the mixed hay or substituting sweet clover and allowing it to stand one full year before plowing down as shown by the following calculation.

Rotation 3.

Corn	Oats	Sweet Clover	Fertilizer
−1.75	−.9	+3.0	+.3
		Net Effect	+.65

Rotation 4.

Corn	Oats	Alfalfa	Fertilizer
−1.75	−.9	+2.5	+.3
		Net Effect	+.15

In livestock areas where manure is available the problem is simplified. However, in most cases in eastern Ohio considerable lime is needed to grow alfalfa and better type of legumes. Let us take a

typical North Eastern Ohio Dairy Farm. Again we assume that erosion is not a problem, 400# of fertilizer and 10 T. of manure, (part of which is leached) is available.

Effect of Manure and Fertilizer	Fertilizer 400# at 1.5 per T.	+ .3
	Manure 10 T. at .11 per T.	+1.1
		+1.4

Rotation 5. (A typical unimproved rotation)

Corn	Oats	Wheat	Mixed Hay	Timothy	Manure and Fertilizer
−2.0	−.9	−1.0	+1.0	0	+1.4
			Net Effect	−1.5	

By shortening the rotation, adding liming materials and improving the quality of hay grown we may get the following effect:

Rotation 6.

Corn	Oats or Wheat	Alfalfa Clover Timothy	Alfalfa Timothy	Fertilizer and Manure
			+.5	+1.4
−2.0	−1.0	+2.0	Net Effect	+ .9

Rotation No. 5 can be kept at 5-years with oats as third year crop and balanced if erosion is not a problem, by use of the legume combination in Rotation #6.

The same procedure as used with rotations can be applied to the individual farm in working out its productivity balance. The algebraic sum of acreages in various crops, the practices followed, the manure and fertilizer applied and the slope of the various fields, times the index or factor for each gives a figure which when divided by the area in rotation represents in terms of per cent the net effect on soil productivity for that year. Changes in the Cropping pattern affect practically the entire farm management scheme of the farm. Shifts in numbers and kinds of livestock, the amount of power needed, and the distribution of labor may all be affected by such rotation changes. It is also possible in many cases that where, because of markets or other considerations, the livestock numbers and kinds should remain the same, that the rotation can be balanced with this in mind. The same can be said when the labor and power or building "set-up" is not adaptable to changes. In making recommendations on an individual farm basis it is always necessary to consider proposals in the light of what other changes will be necessary and whether such shifts are adapted to the particular situation.

Balanced Productivity in Relation to Income

In Ohio an attempt has been made to determine whether there is any relationship between the net effect of the cropping and livestock program and the income derived from the farm. Several studies have been undertaken by the Department of Rural Economics with this thought in mind. In 1936, a study was carried on in cooperation with the Agricultural Experiment Station, the Soil Conservation Service, and the Bureau of Agricultural Economics of the United States Department of Agriculture in three areas, which were typical of the types of farming in surrounding areas. The study included 86 farms in Ashtabula County, in the Northeastern Ohio Dairy Section; 80 farms in the General Livestock area in Wyandot County, and 76 farms in the Cash-Crop and Grain Area of Wood County. Survey records were obtained on practically all farms in the areas mentioned.

Productivity balances over a four-year period were computed for each farm and other pertinent facts concerning cropping patterns and livestock numbers were gathered. The labor income data on each farm for 1935 was also obtained. The farms were grouped on the basis of their productivity balances.

In Ashtabula County Area the farms which were being improved at the rate of from +.26 to +.50 per cent per year produced a labor income of $18.34 per rotated acre. Twelve farms where fertility was being depleted from −.51 to −.75 per cent per year returned a labor income of only $6.48 per acre. It is of importance to note that in this dairy area that quality of hay as indicated by the legume content and the amount of liming materials used was of more importance than the per cent of the rotated area in depleting crops in determining a productivity balance. Lower crop yields were an outstanding factor on farms farthest out of balance.

In a General Livestock Area, Wyandot County, of North Central Ohio, 15 per cent of the farms surveyed were in balance and showed the highest average Labor Income both on a per farm and a per crop acre basis. In this group of farms, poorer productivity balances were associated, with (a) higher percentages of rotated area in depleting crops, (b) higher percentages in timothy hay, (c) smaller numbers of livestock both per farm and per 100 rotated acres, (d) larger sales of corn per farm, (e) greater percentage of tenancy and (f) lower crop yields. Labor Income records for either

the crop year of 1934 or 1936 might have given a different picture when corn prices were higher.

In a Cash Grain Area of Northwestern Ohio 16% of the farms surveyed were in balance and showed the highest Labor Income per farm and per rotated acre.

It should be noted that in newer agricultural areas of Ohio there is not the correlation between crop yields and percentage of farms out of balance that prevailed in Ashtabula County, an older agricultural area. The relationship between depleting and conserving crops is of more importance in maintaining a balance in this area where the hay crop universally contains a higher percentage in legumes. Some shifts to conserving crops and more legume green manure crops are necessary to bring these farms in balance.

Additional evidence has been gathered from farm account records in the past three years bearing upon this relationship between productivity balance and income. An analysis of farm account record data tends to show that in most cases the higher income groups are maintaining a better productivity balance. Data on which this statement is based come from selected Type-of-Farming groupings in various sections of the state in 1935, 1936 and 1937.

In Eastern and Northeastern areas (the older agricultural areas) in only three groups, the Dairy-Cash Crop, Dairy-Poultry-Cash Crop and Cow-Sow-Hen groups, were the high income farms exhausting the soil resources at a rate slightly more rapid than the low group. In western Ohio the depletion was greater in the high income Cash-Crop and Grain group and would amount in three years to the equivalent of growing a crop of corn on the whole rotated area in any one year.

A general summary of the findings so far in Ohio is as follows:

1. Average crop yield by decades over the past 60 or 70 years indicate that the productivity level of Ohio soils is not being maintained.
2. The organic matter content and physical condition of the soils on many farms in Cash-Crop and Grain Areas and on many tenant operated farms is rapidly being lowered by too heavy cropping to depleting crops.
3. Approximately 20% of the farms in Ohio are maintaining soil productivity as measured by indexes of erosion, depleting and conserving crops, and practices now being used in Ohio. The

farms already in balance are generally securing higher incomes than those out of balance.

4. Generally, in the older agricultural areas of Eastern and Northeastern Ohio, farms in balance as regards soil productivity are receiving higher incomes than those not in balance. The problem there is more one of liming, better quality conserving crops, and not as much shifts in acreages.
5. In the newer agricultural areas of Western and Northwestern Ohio, the farms actually or nearly in balance are not always highest in income. The problem in this area in maintaining soil productivity is one of greater acreage of conserving and green manure crops. In some cases a drop in income might result while shifts are being made.
6. This utilization of a soil productivity balance index along with farm management data furnish as a good educational device for approaching the problems of the individual farm.

TYPE OF FARMING MODIFICATIONS NEEDED IN THE GREAT PLAINS

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The Great Plains presents the problem of building an economy which is decidedly different from any economy which has been established in other agricultural areas of this country. This economy will be different, both for the individual farmer and for the community, and it will affect the manner in which national programs and policies are applied. The peculiarity of the region is to be explained mainly by the variations in production and the consequent wide range of income.

Most other areas have built their economy upon a rather fixed annual production. It is true that this production may vary 10 or 20 per cent and in rare years even more, but in the Great Plains the variations range from four bushels of wheat one year to 40 bushels the next with a possibility of five, ten or forty bushels during the following year. This variation is so accentuated because the Great Plains is one of the world's richest soil belts, and rainfall is the controlling factor. When rainfall is plentiful, extraordinary yields result, and of course when the amount of rainfall is inadequate poor crops or failures prevail.

If the climate were consistently humid as it is in the Mississippi Valley or consistently arid as it is in Arizona, an economy could soon be devised that would fit the area. However, we should recognize that a true definition of semi-arid means that half of the years are dry and the other half are wet rather than that there is fifteen inches of rainfall every year as over against thirty inches in humid areas. Furthermore, the wet and dry years do not come in series nor alternately, but are unpredictable in their succession. By such a definition, we have described the fundamental characteristic upon which a Great Plains economy must be built.

Not only is there a fine economic balance to be struck because of the variations of income, but the checks and balances of nature are also very fine. Land cannot be plowed up and tilled in a manner which is suitable to wet years only, but the manner of tillage must be such as to guard against serious wind erosion during the dry years. Such a dry year may follow immediately upon a wet year. Range must be grazed in such a manner during periods of luxuriant

growth, that it will have sufficient vitality to withstand drouth conditions even though these drouth conditions may be a year or two or five years hence. This usually runs counter to each individual's farm management plan for a given year, but must be a first consideration if the farm operation is to succeed over a period of years. In other words, the physical resources as well as the economic structure must at all times be "cushioned" to meet anticipated variations in conditions. The managerial skill of the operator must meet not only an additional but a fundamental factor.

What are some of the elements in an economy based on variation? We may be safe in saying that these are not too well defined as yet. The experience of the white man on the Great Plains of America covers only a span of sixty years and only the last thirty years have been devoted to cultivated crop production. The elements have been further obscured by the fact that a period of wet years coincided with the wave of settlement, and, therefore, it is only in recent years that the stresses and strains that are put upon a farm unit by variable productivity have become recognized. Historically, there is no precedent inasmuch as man living in an economic and social system approaching ours in character has not occupied areas such as the Great Plains for any great length of time unless it be that Spain and Greece have a dry climate similar to that of the Plains.

The keystone of an economy based on variations would be flexibility. Or to use a catch phrase, it would be an ability to "roll up" and "unroll" much after the manner of some plants and seeds which have structural provision for meeting unfavorable conditions in order that they may later take advantage of suitable growing conditions. This flexibility would necessarily be such that a farm or ranch operator might reach out rather quickly to take advantage of good grass and good farm conditions. He needs a combination of enterprises so that he can emphasize at least one such enterprise which he knows will respond to the immediate weather condition. As an example, let us assume that an area has just come through a dry period during which there has been a low productivity as far as grass and grain is concerned. It has been necessary to drastically reduce livestock numbers. Now a wet year appears and even though the grass on the range is knee high there is not sufficient livestock to graze and convert this grass into income. He could replace the livestock rapidly, but chances are he would do this at

high local prices and he would rather rebuild by natural increase. During a wet year he has the grass but can not fully harvest it because he does not have enough stock. Wheat, on the other hand, will also respond to a good season of rains, and if the operator has been carefully keeping in condition some suitable wheat land, he can give special attention to his wheat and convert the good season into cash. Possibly by having a combination of wheat and livestock the unit is more flexible than by having livestock only or wheat only. He has been able to make something of a good year while he was going through a process of rebuilding his herd or flock.

During unfavorable years, the resources must be handled with particular care, and operations cut down to avoid the dissipation of the reserves that have been accumulated. Livestock numbers would probably decrease during this period, and cropping would be planned each year only on the basis of the moisture penetration which prevailed each spring.

A few sign posts are being developed which aid the operator in his adaptation. In fact, the winter wheat portion of the Great Plains now has some criteria which may guide it in determining its annual cropping policy. The Kansas Experiemnt Station has established a ratio of possibilities showing that with one foot of moisture penetration at seeding time the prospects for a crop are low, whereas with three feet of penetration the prospects are relatively high. No such criteria exist as yet in the spring wheat portion of the Plains due to the fact that spring wheat is more dependent upon summer moisture than is winter wheat.

Perhaps the livestock operator should be interested in a different type of production than is his fellow producer east of the Missouri River. He is particularly interested in carrying on a type of production that will enable him to cut down quickly in unfavorable years and expand quickly during the favorable years. The ranchers on the Plains may not find it economically advisable to produce baby beef as does the man in eastern Nebraska. It may be that his operations will be more flexible if he produces two or three year old steers. By doing this he may be able to cut down his numbers rather quickly and yet not destroy the foundation of his herd, as would be the case if he were to market baby beef. His plan of operations will look toward economic stability and preservation rather than to maximum efficiency of production factors at all times. A rancher will want to consider the safety factor first of all

in setting up his plans, even though it means that part of the time his equipment is being used to its maximum where at other times it might not be fully in use.

The peculiarities that I have just cited require not only an adaptable production schedule that varies with the moisture condition, but require a philosophy that recognizes certain management practices that are unknown or unnecessary in humid areas. It must encompass rapid adaptation to changing climatic conditions as over against consistent and fixed operating schedules which are usually looked upon as being one of the first elements in efficiency. This philosophy would include the courage to "roll up" quickly during unfavorable conditions, and to "unroll" quickly but safely when the situation is favorable. The operator must not have great qualms about shutting down his unit drastically and quickly even though it may not be consistent with what is ordinarily termed good farm management practices.

No doubt it will be necessary to further recast some concepts that apply in areas of more or less consistent weather, and one of the concepts that may undergo drastic revision is that of diversification. On the Great Plains, it is not possible to diversify within the limits of a given farm unit which may lie on one or two sections of upland. The farm unit may be located on benchland which is admirably suited to wheat production, and since wheat is better adapted to an arid climate than any other cultivated crop, wheat is no doubt the best crop for that farm. If we undertake to revise a farm organization by incorporating alfalfa and oats, we may find that the net income for that farm is materially reduced and nothing will have been added to the stability of that farm unit for the reason that it is the low productivity years which set up the strain in farm organization. It has been the experience of farm operators that wheat is the last crop to fail, with the possible exception of native grass.

Diversification by areas, however, as over against diversification by specific farm units may be a concept which will apply under semi-arid conditions. For example, if you have some irrigated land within an area covering several townships, also some good wheat land and some grazing land, it is possible to work out a use pattern whereby all of these types of resources can be woven together into stable operating units. Under the concept of area diversification, the farm headquarters would be located within the irrigated area,

and assuming that the feed crops were grown on irrigated land, we might also assume that in this modern day the same operator could economically grow wheat upon high class wheat land not too far distant. He could move his rubber tired machinery several miles and carry on the field operations with very little loss of efficiency. His livestock would run on the grazing reservation which might be near his home or some distance away. This grazing reserve would be handled cooperatively, and the cattle would be taken care of by the Association during the grazing season. Thus, by taking advantage of different types of resources over a larger area, the farm operations may be well diversified, with some alfalfa for a feed base, with some wheat grown according to good Soil Conservation methods, and with livestock on the grazing reserve.

Diversification as a principle is as sound on the Plains as anywhere. However, the application of it requires definite modification. Whereas this concept may be somewhat difficult to envisage, yet it is entirely possible that a plan of diversification covering as much as an entire county could be worked out.

The principle of a "cushioned" farm organization is also involved. In the case cited above, there were three types of resources mentioned, namely, irrigated lands, crop lands, and reserved grazing lands; by having such a combination a farm operator would absorb the shock of a bad year in the following way. He would cut down his livestock to what his range would carry without overgrazing, and would gage his numbers to his winter feed. If the situation looked really threatening, he would fall back rather quickly to his foundation herd and to the garden and feed supplies from his irrigated tract. He would use every means to husband his reserves so that he would have cash as well as other resources with which to "unroll" when conditions were again favorable.

The Milk River Project, which covers parts of three counties in the Northern Plains, is an effort to reorganize the use of resources on an area basis. The Milk River is the source of water for a rather narrow strip of irrigated land along its course. Extending back on either side are many miles of grasslands interspersed with "benches" of farming lands.

The program has encouraged the development of the irrigated land for intensified production with most of the homes also located on these lands. The families are gradually congregating in this area where good schools, roads and other facilities can be most

efficiently maintained. The grasslands to either side have been improved for grazing purposes by building watering places and by reseeding to grass the lands that have been determined as unsuited to cultivated crops. These lands are under the management of an association whose membership includes those families living on the irrigated lands. The livestock is pastured by the Association in the manner described elsewhere in this paper. Some of the operators do have some wheat land which they operate from their irrigated headquarters. Here is a place where area diversification and "cushioned" farm organization is being undertaken. The families involved believe that they have found security by ironing out the effects of variable income. Not all the Great Plains can be cut up into areas having just this combination of resources. However, many stability giving combinations can be worked out.

The concept of the community pattern of the Plains may be one of rather closely congregated farmsteads. I have already indicated the possibilities in this direction in the foregoing discussion of diversification. Since the acreages within farm units must be relatively large, there is a choice between a widely dispersed population pattern with its attendant high cost of schools and other public facilities, or a concentration of the headquarters within limited areas or in "string" communities. This type of community pattern necessitates great mobility of farm equipment and of livestock.

Perhaps I should discuss briefly the idea of area management since it has become an important feature in Great Plains agriculture. It is a concept which has risen rather quickly during recent years due to the fact that the control or use pattern does not coincide with the ownership pattern. Already there are in the western Plains about twenty million acres which are under the management of associations. These associations are composed very largely of ranchers who are organized to control, by lease or purchase, all of the lands within the limits of a given district. The Association carries on all negotiations with land owners and pays lease fees according to a lease agreement based on each acre's carrying capacity. The association provides for range riders during the summer seasons, manages the grazing operations through its board, and plans the distribution of water and of grazing rotation. The members of the association determine the carrying capacity and consequently they establish the number of livestock that may be run within the district. Each member of the association is allocated

livestock on the basis of the amount of winter feed which he can produce. He pays for the pasturage at a given rate per head for each month he is on the reserve with the rate varying according to the price of beef or mutton, and thereby introducing an element of flexibility to meet variations in number of livestock run, as well as price.

Area management also expresses itself in the Soil Conservation Association. Under the soil conservation district, the Association formulates various ordinances which may affect the farm practices or the manner of handling the soil, and it may in effect zone the land to certain uses. This, in turn, affects the individual's operating arganization. It also makes possible certain kinds of diversification and certain flexibilities which are not inherent in the strictly individual type of operation. The association idea introduces certain possibilities for stability and flexibility which might not otherwise be available.

Area management in the form of grazing associations and soil conservation associations definitely modifies the management of each farm. For instance, a rancher will be guided very largely as to the size of his herd by the number of animals apportioned to him on the reserve. The maintenance of the range is carried on cooperatively. Instead of an annual race for leases, which are finally acquired at excessive rates, the leasing is done by the Association with the rancher paying only for the number of head he runs on the reserve. Thus are individual management and area management blended together.

Flexibility is the keystone to successful farm operations under the variable conditions that prevail in the Great Plains. A few of the elements through which flexibility may be introduced are discussed in this paper, and many more can be enumerated.

DISCUSSION BY E. C. JOHNSON

Farm Credit Administration

Mr. Starch has placed particular emphasis upon the need for flexibility in the agriculture of the Great Plains. On this point there appears to be general agreement. In any region where climate is variable to the extent it is in much of the Great Plains area farmers must be in a position to make adjustments in their operations to meet changes in moisture conditions. Also in an area where income may vary greatly from one year to another, it becomes important for the farmer to have reserves in the form of cash, or products and livestock which may be sold to meet financial obligations

and necessary expenses during the years of low income, or in other words, during the years of favorable income preparation must be made to take care of the farm business during the lean years which are sure to follow.

In discussing systems of farming which may have the flexibility desirable in the Great Plains, Mr. Starch apparently places considerable emphasis upon wheat production as an enterprise giving flexibility. While I agree that in many sections of the Great Plains wheat will continue as an important enterprise, yet I cannot agree that it should play the important role that Mr. Starch implies. In fact, in that area of the Great Plains lying west of the one hundredth meridian one of the major adjustments needed is to reduce the acreage in cultivated crops by placing a larger proportion of the land permanently in grass and giving relatively more emphasis to production of livestock. Much of this area does not have sufficient rainfall for profitable production of cultivated crops except on limited areas where soils have greater than average water-holding capacity. Continued cropping of lands susceptible to wind erosion has lowered the productivity of large areas and we are now faced with the problem of restoring such areas to grass. Instead of using lands for wheat production and assuming the high risks due to low yields or crop failure because of insufficient rainfall, and in addition being faced with the prospect of having to sell the wheat crop in favorable crop years on a glutted world market, it would appear desirable to use more of the crop land for the production of feed crops and in favorable years build up feed reserves to maintain livestock.

If a shift is to be made in the direction of increasing the relative importance of livestock production in the Great Plains, larger farm and ranch units are needed. Many farms now are too small to yield an adequate family living, and with a shift to more extensive use of land leaving a larger part of the land permanently in range for use in livestock production, the farm unit must be enlarged. I wish to mention a few points which might be considered in effecting this adjustment.

A change to larger operating units, unless carefully planned, may result in families being scattered over a large area with great distances between farmsteads. Such a condition would make it very expensive to provide schools, roads, and other public services. Attention, therefore, must be given to area planning along the lines which Mr. Starch mentions in his discussion of diversification by areas as a means of utilizing the resources to best advantage. The farmsteads might be located within a comparatively small area with each family using land extending outward from this area. Management of grazing lands by a grazing association may well be an important feature of such land-use patterns.

Maps showing the present ownership pattern for lands in the Great Plains are essential to intelligent adjustment in the direction of establishing larger farm units. Ownership maps are available for many counties of the area but attention should be given to preparing maps for additional counties and analyzing the ownership pattern with the view of blocking out tracts which might be considered as economic units of sufficient size to give a family an adequate living standard.

Many lands in the Great Plains have been acquired by creditors includ-

ing individuals and loan institutions, and most of these lands are for sale. In disposing of the acquired lands, it is important that an effort be made to consolidate holdings and instead of selling to families tracts that would not be of sufficient acreage to provide a fair living, attention should be given to sale to persons now in the area as a means of increasing the size of farms. Also in disposing of these lands, consideration should be given to enlarging the holdings of the individuals who have the ability and experience to conduct a farm business adapted to the region with special attention to livestock production.

Federal acquisition of land to be leased to operators of farms needing enlargement can well play an important part in bringing about adjustments needed in the Great Plains. To date purchase of land by the Federal government has been carried on only on a limited scale, but we have now reached a point where this program can be expanded to advantage if funds are made available for this purpose. The use of lands of the type which should remain permanently in grass can be controlled to insure that they will not be plowed or overgrazed if they are owned by the Federal government and the range leased to livestock producers. Many individuals including creditors appear willing to sell land at a fair appraised value even though the price be materially lower than the investment which they had in the land when it was acquired. Ownership of land by the Federal government which could be leased to operators who need additional land would provide a flexibility in the size of farms which is desirable in the Great Plains.

Finally, we should remember that adjustments take time. Realizing that an acute situation exists in the Great Plains we are likely to become impatient and feel that sweeping measures for adjustment are needed at once. Actually many of the adjustments can be made only over a long period of years. Meanwhile it is important that all agencies, Federal, State, and local coordinate their activities and focus the attention of citizens in the area on the long time objectives. Legislation by states to enable zoning of land and the proper clearing of the tax titles is needed. If such legislation is passed and adequate appropriations made for purchase of lands by the Federal government, a long time program of adjustment can be developed which will increase and stabilize the income of the people in the Great Plains.

FEDERAL PURCHASE AND ADMINISTRATION OF SUBMARGINAL LAND IN THE GREAT PLAINS

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The title proposed for this paper suggests the ineptitude of the term "submarginal land" as a name for the policy which is the subject of this discussion. Little, if any, of the land in the Great Plains is "submarginal" in the sense that it is not adapted to agriculture of some type under proper conditions of tenure and size of holdings. The objective of the program of purchase, therefore, as applied to the Great Plains has not been, in any important degree, the withdrawal of land from agriculture; but rather, to make possible a change in the type of agriculture.

It is well known that the serious conditions that have attracted so much attention to this great region since about 1930 have been due largely to the persistence of the low phase of the rainfall cycle aggravated by coincidence of a period of unusually low prices for the staples of the region. The ill effects of these unfavorable conditions have been intensified by the type of farming and of land tenure that had developed, much of it during the preceding generally high phase of the rainfall cycle, which coincided more or less closely with a period of good to high prices for the staples of the region during more than a decade and a half preceding 1930. Specifically, the type of farming has been characterized by an undue concentration on wheat production as a cash crop in roughly the eastern half of the region and in the western portion by a necessary dependence on cattle or sheep for market, but also sporadic attempts to produce wheat. The unfortunate consequences of these unfavorable conditions in the form of bankruptcy, foreclosures, tax delinquencies, serious erosion, enforced liquidation of assets, and extensive and more or less aimless emigration have been so adequately described that it is not necessary to expand upon them in this paper.

Indicated desirable readjustments in types of farming take the form of greater dependence on cattle and feed crops in the areas now largely concentrating on wheat, and in the strictly range areas, less intensity of grazing and where practicable production of supplementary forage crops. Such readjustments, however, and particularly the introduction of a greater degree of stability into

the economy of the region are seriously frustrated by conditions of land tenure. The pattern of land tenure was determined in the first instance largely by the various homestead acts and in certain strips by railway land grants of the checkerboard type. Subsequently the pattern has been profoundly modified by the operation of such processes as land abandonment, sale, foreclosure, administration of tax delinquency legislation, and the extensive development of tenancy.

Individual farmers have overcome these disadvantages in some measure either by purchasing or renting additional land or utilizing abandoned lands without formal agreement. There is plenty of both classes of land to be had, for in many parts of the region corporations or non-resident persons own nearly one half of the land. Lack of capital, however, in a region so financially impoverished and heavily indebted constitutes an effective barrier to widespread enlargement of operating units by individual purchase. In general absentee owners are interested in renting their lands mainly as a temporary source of revenue pending as early disposition by sale as practicable; and therefore are not interested in providing their holdings with necessary improvements nor in leasing them for periods sufficiently long to justify the lessees in making requisite improvements. Such individual adjustments therefore fall far short of notably promoting the permanent stabilization of the economy of the region. When periods of good rainfall or high commodity prices recur there is likely to be a tendency for the newly constituted operating units to be broken up again either through the desire of the operator himself or more usually through the unwillingness of landowners to rent or sell at rates that will justify range use, while absentee owners and those owning abandoned lands flock back to put in a crop or two of wheat, thus postponing for years return of the land to grass and subjecting it meanwhile frequently to the destructive influence of wind erosion. On lands used for range under short leases there is virtually no inducement to avoid overgrazing; and the expense of returning arable areas to grass and of providing requisite fencing and water supplies is frequently a deterrent to the reconstitution of the system of farming even when conditions of tenure admit.

The purchase and development of land is not of course the sole program for reshaping the economy of the Great Plains. The Federal Conservation Service has been active in demonstrating

by means of numerous projects practicable methods of controlling erosion. Under the Texas Conservation Act counties are taking protective measures to check wind erosion. There has been developed also the so-called "restoration land" program of the Triple A, under which 50 cents an acre is paid each year for three years for allowing cropped land to revert permanently to natural cover when such change in use is desirable for purposes of conservation. Stockmen may receive $1.25 per animal unit of grazing capacity for withholding one fourth of their range from use during one grazing season, besides payments for reseeding, contour furrowing, ridging, and constructing stock water facilities. This general policy is theoretically capable of rendering considerable aid in facilitating transition to a less destructive type of land use and permitting nature gradually to heal the scars man has inflicted. The Restoration policy, however, does not correct the basic difficulties associated with an illogical and unstable tenure pattern and it is doubtful that it assures continuance of the non-use for crops of the so-called restoration land when it becomes subject to new stimuli of favorable prices and rainfall. In view of these considerations public purchase may be the cheaper long run policy.

The Farm Security Administration during the past year has sought to meet the difficulties mentioned by making rehabilitation loans to farmers who could arrange to lease lands of sufficient area on a ten-year lease to constitute an economic unit for range use or mixed livestock and arable use. The loan is used for fencing, purchase of lifestock, equipment and other capital requisites for enlarging the farmer's unit of operation. This policy is sound in conception but is subject to the obvious difficulties of finding landowners willing to lease land for so long a period and farmers who are not so hopelessly involved financially that the enlargement of their scale of operations through further loans appears unwarranted. It is subject, also, to the disadvantages of having to incur large capital outlays on a land tenure of relatively short duration and in the face of the financial hazards that confront the individual who undertakes the restoration of depleted or broken up range under the marked seasonal fluctuations and uncertainties that characterize the region.

The land acquisition and development activity of the land utilization program was undertaken with the objective of overcoming so far as practicable the unfavorable conditions of land tenure, al-

ready described, which appear to present such serious obstacles to the readjustment of the economy of the region in the direction of a greater degree of conservation and stability. While the program was initiated subsequent to the development of some of the other Federal programs that have been mentioned, its continuance in conjunction with them has appeared justified by the inability of these other programs to correct permanently the basic causes of maladjustment.

This program of public land acquisition in subnormal, or so-called submarginal, areas was first initiated by an allocation of $25,000,000 under the National Recovery Administration Act in the late winter of 1934. Subsequently additional emergency allocations for land acquisition brought the total amount available for that purpose up to about $40,600,000. By reason of the diversion of part of these funds to specialized objectives such as purchase of lands primarily for migratory waterfowl refuges, for recreational use, and for Indians, only about $27,000,000 was available for projects primarily of the agricultural adjustment type; and of the 9,100,000 acres purchased, 6,772,588 acres were in projects of that type. In the entire program additional relief funds in the aggregate of about $53,000,000 became available for the improvement of the lands purchased, of which about $9,000,000 was employed in the Great Plains. It is not necessary to trace the enforced administrative migrations of the program through the New Deal alphabet until its final return to the Department of Agriculture, within which it has recently been transferred from the Bureau of Agricultural Economics to the Soil Conservation Service. It is necessary to add, however, that in July, 1937, Congress gave the program a more durable legal foundation through passage of Title III of the Bankhead-Jones Act, which authorized appropriations to a total of $50,000,000, of which $15,000,000 has been appropriated to date. Throughout the remainder of this discussion it will be convenient to refer to this as the "new program" and to the earlier program supported by emergency funds as the "old program."

The obvious inadvisability of making sporadic purchases throughout the entire Great Plains region dictated the procedure, both in the Great Plains and in other parts of the Nation, of setting up and operating within projects—that is, areas within definite boundary lines which constituted administrative units for planning, acquisition and development. In the Great Plains there were

established under the "old program" a total of twenty-one projects. In the Intermountain region were formed additional agricultural adjustment projects where semi-arid conditions create problems similar in many respects to those encountered in the Great Plains, particularly in the western part of the Plains. The Great Plains agricultural adjustment projects under the old program comprised a total area of 13,860,535 acres, of which 3,656,000 acres were purchased. If we add the area purchased in the four similar projects of the Intermountain territory the total is just short of 4,000,000 acres. Additional acreage purchased in semi-arid territory for other purposes than primarily for agricultural adjustment, such as for wild life refuges, Indian uses, and recreation, makes the total area purchased under the "old program" in the Great Plains and semi-arid portions of the Intermountain region 5,580,740 acres. Under the "new" program, inaugurated little more than a year ago, the Secretary has authorized purchases in the Great Plains and semi-arid part of the Intermountain region for 41 new projects or extensions of projects, to a total of 2,321,000 acres, of which 831,000 acres was under contract on the first of this month. Thus, the total area purchased or under contract in the territory mentioned in both "old" and "new" programs is in the aggregate 6,411,740.[1] This is about two thirds the area of the three States of Massachusetts, Connecticut, and Rhode Island combined.

The entire area within project boundaries in the old program plus the acreage authorized for purchase under the new program, together with the four similar projects in the Intermountain region, is nearly 23 million acres, or about the area of all the New England States excepting Maine. This is significant because we find it possible through the purchase of a given acreage in the Great Plains to exert a strong influence in the direction of a more stable and efficient economy over an area several times the area purchased; and it is approximately correct to say that the land purchase and development program in the regions under discussion is in the way of exerting a notable influence for improvement throughout most of the territory which I have said is approximately equivalent in extent to the New England States combined, omitting Maine.

It will be well to leave our statistics for the moment in order to

[1] This includes 21,000 acres in so-called "water conservation" projects in the Southwest, small areas purchased primarily to afford location of storage reservoirs.

make this point clear. In the typical project area in the Great Plains, especially in the western part and the Intermountain Region, privately owned land is interspersed with large areas in scattered tracts of public domain, State owned land, and land held by railways and corporate owners. Control of the use of much of this land can be effected through the formation of cooperative grazing associations which can acquire lease rights to these scattering ownership units. Public purchase of the more strategically located tracts and especially of tracts that cannot be readily acquired by lease tends to make possible reshaping the size and character of operating units in the direction already indicated as necessary.

Methods of operation of the program and the nature of the adjustments effected may well be illustrated by two adjacent projects along the western boundary of North Dakota where nearly 700,000 acres have been purchased and developed, thereby contributing to improvement of the economy of an area of 1,200,000 acres. The area selected for detailed consideration is only a portion of the southernmost of the two projects.[2] In this site 61,000 out of a total area of 91,000 acres have been purchased. The substantial result of the program in this and other similar areas has been to thin out a population too excessive to make possible the widespread operation of holdings of size adequate to permit a range economy or range supplemented by forage production. Of the 80 original operators, who formerly operated units averaging about 1100 acres, 38 now remain in the area with operating units averaging 2400 acres each, with resulting improvement of their financial status and ability to get along without Government relief. Most of the 42 operators who have left the area as a result of the purchase program have relocated themselves within the same region. Fifteen of them have located on non-irrigated farms within the county or State, 7 on irrigated farms within 50 miles, 14 have moved to other States, 2 have abandoned farming and are now working as laborers nearby, and 4 are chronic relief clients.

The program has also made possible considerable savings in the costs of maintaining schools and roads. Four of the schools which were operating at the initiation of the project have been closed and ten miles of primary roads and 48 miles of secondary roads eliminated.

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[2] At this point a series of maps were shown and discussed extemporaneously. The maps are not reproduced in this JOURNAL but will shortly be published by the Department of Agriculture.

In the illustration just presented, lands purchased under the land utilization program were leased to a cooperative grazing association. This policy has been followed wherever such associations are available and an effort made to encourage their formation where they do not already exist. At the present time projects located in western North Dakota, Wyoming, and Colorado are administered in this manner. In each case a grazing agreement is entered into between the local cooperative grazing association and the Secretary of Agriculture whereby the Government leases the land to the district subject to certain conditions and restrictions excepting certain lands needed for temporary occupancy or which are not primarily suitable for grazing (such as crop land or overgrazed land). The primary condition annexed to the agreement is that the Government will determine the carrying capacity of the land and it cannot be used for any purpose other than grazing nor in excess of the determined carrying capacity. The agreement also provides that the association shall develop a range management plan which shall be subject to the approval of the Department.

In other cases lands have been leased direct to individual operators to become part of their operating units for the duration of the lease, subject to renewal. In still other cases lands have been formed into fenced community pastures in which different individuals are given grazing permits for an appropriate number of livestock. In all cases the leases or permits to individuals are subject to restrictions designed to improve or maintain range resources.

Inasmuch as the lands acquired in connection with the Land Utilization program of the Department of Agriculture are in many instances interspersed with public domain lands under the jurisdiction of the Division of Grazing of the Department of the Interior, it has been necessary to develop an arrangement for coordination with the program of the Grazing Administration. These projects include land primarily suitable for grazing which is grazed in common with public domain and other lands. A memorandum of understanding entered into between the Resettlement Administration and the Department of the Interior in October 1, 1936, covers land utilization project lands within grazing districts of the Grazing Administration in the States of Montana, Utah, and Idaho, provided the lands are to be grazed in common with public domain.

Under the agreement all lands acquired under the land utilization program which should be used for the production of feed crops

and for winter grazing, are to be leased direct to individuals by the Department of Agriculture while the lands to be grazed in common with public domain are listed with the Division of Grazing, which in turn makes these lands available to local cooperative grazing associations within grazing districts formed under the Taylor Act, or to the operators direct, where cooperative grazing associations have not yet been organized.

The Department of Agriculture has reserved the right to promulgate rules, regulations, and policies with respect to prior use, dependency and commensurability on all its lands within Taylor Grazing Districts in order to insure preferential treatment of applicants who could not otherwise qualify under Taylor Grazing rules, in order to assist in readjusting land use in the project area, and to build up small grazing units to economic size. Up to the present time the policy under the land utilization program has been to promote the rehabilitation of the small and moderate sized operating units remaining in project areas, rather than to enlarge still further the larger units, but with due reference to considerations of commensurability and priority of use. As already indicated, the purchase program was directed to the elimination of unduly small units, whether of the arable or grazing type, when the enlargement of the unit to adequate size by the addition of other lands did not appear practicable.

The two administrative agencies agree to cooperate in determining carrying capacity, rates of stocking, range rules, and rates to be charged for grazing permits. This has not been entirely satisfactory, for policies of the two agencies have differed somewhat in reference particularly to rates to be charged for range permits.

In the Dust Bowl of the Southern Great Plains the exigencies of checking wind erosion have caused greater emphasis than elsewhere on the purchase of "nuisance" lands; that is, lands peculiarly subject to wind erosion which are therefore the point of origin for great quantities of silt, sand, and dust that injure other lands and are a source of great discomfort to the residents of the region. Frequently such lands are held by absentee owners who assume no responsibility for protecting their lands and abating the nuisance, sometimes renting them to "suit-case" farmers who prevent the growth of a protective cover.

It is not the intention in this paper to support the thesis that public land acquisition is the sole remedy for the ills that afflict

the Great Plains. For one thing, I would not propose its employment as a major implement to prevent the periodic expansion of settlement on the basis of a hazardous and essentially speculative type of arable farming under the stimulus of recurring periods of good rainfall or high prices. The area of range land that might be occupied or broken up by the plow under the influence of such stimuli is too vast to make its acquisition by the Federal Government appear a practicable expedient. For such a purpose other methods should be employed. Rural zoning would be a significant measure if local public opinion will support it. A more adequate effort to discourage would-be settlers through informing them of the nature of the hazards they would encounter joined with refusal to permit extension of public credit and discouragement of extension of private credit, coupled also with announced intention to refuse relief payments and other subsidies to those who deliberately refuse to abide by a sound policy of land use and settlement might prove effective implements. The gradual extension of the area under lease and control by cooperative grazing districts will correspondingly tend to reduce the area subject to speculative land settlement and cultivation. Therefore, one of the most significant modes of applying the public purchase program is in deliberately encouraging and facilitating the formation of cooperative grazing districts.

MEASURING CHANGES IN THE DEMAND FOR FARM PRODUCTS

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In preparing this paper, I have attempted merely a sketchy survey of a few of the problems involved in measuring demand with particular attention to those questions which arise most frequently in our every day price analysis and outlook work.

The term "demand" may be defined as the schedule of quantities which buyers are willing to take at a specified series of prices, or the schedule of prices which buyers are willing to pay for a series of quantities, in a given market at a given time. Thus, strictly speaking, the problem of measuring demand is one of measuring a state of mind. This, of course, is impossible and we must content ourselves with attempting to obtain an approximation of the true demand schedule. There are several approaches to this problem, the one most generally followed being the familiar process of multiple correlation. Professor Schultz and some other writers have given passing attention to the family budget method. Another, and quite different, approach might be termed the experimental method, which, I believe, has excellent possibilities not yet explored by our statistically minded analysts who are more accustomed to working with time series. A discussion of any one of these approaches would consume all of the available time, and it will be preferable to devote our attention to the more commonly used methods involving multiple correlation analyses.

The problem of the statistical approximation of true demand curves from historical market data is essentially one of separating the changes in prices and quantities which are due to the time shifting of the demand schedule from those changes which represent merely a change from one point to another on the demand schedule or curve itself. The ordinary multiple correlation analysis really does not accomplish this objective, merely giving the average relation between prices and quantities over the period of time covered by the analysis, after adjusting for changes associated with changes in other variables included in the analysis. It does not indicate the extent to which changes in the prices associated with given quantities may be due to changes in the elasticity of demand as opposed to shifts in the curve as a whole. Or rather, by holding

constant the shape of the demand curve at all levels, such analyses assume certain arbitrary changes in elasticity. Changes in both the elasticity and level of the demand curve might be analyzed by joint correlation methods if the data are adequate to describe a "warped" surface, but thus far the methods in use have been too elementary, or the data too inadequate, for very successful manipulation of this sort.

"Average" demand or supply-price curves of the nature indicated, for most of the major and some of the minor agricultural commodities, have been "determined" by multiple correlation analyses made by a number of federal and state economists. Nearly all of these have been graphic analyses, the most noteworthy exception being Professor Schultz' recent work. Many of these analyses, including a number contributed by myself, have failed to "work" when projected into subsequent years. It has been customary to alibi such failures by referring glibly to "changing relationships between the variables." It should provoke thought, however, that in so many cases the sudden shift in fundamental relationships seems to have occurred in the year following publication, whereas the relationships seem to have been remarkably stable during the immediate preceding period covered by the analysis! Some of us recently have begun to suspect that the all-too frequent failure of these analyses to work as forecasting devices has been due not so much to changes in price-demand-supply relationships as to weaknesses in the analyses themselves. To put it briefly, the use of multiple correlation analysis, as of other statistical methods, is predicated upon certain fundamental assumptions with respect to the character of the data, which frequently are not justified in connection with economic data, and particularly prices. The use of mathematical as opposed to graphic methods of multiple correlation, which some statisticians optimistically have thought would rectify most of the errors made in the past by price analysts using graphic methods, offers no promise whatever of meeting the fundamental difficulty. Some of those in the Bureau who have been giving attention to this problem think there may be a way out of the dilemma, but that is a matter for another discussion. It seems quite safe to say, however, that much of the work already done along these lines will have to be done over, and that price analysts need have no fear that all of the cream has been skimmed off the milk from which they get their sustenance.

It must be evident from even this brief consideration of some of the problems involved, that the isolation of a demand schedule or curve for a commodity is by no means an easy undertaking. Most of the so-called demand or supply-price curves which have been made available as a result of past analyses probably are not what they appear to be. This conclusion is based both on theoretical considerations relating to the concept of demand and the implications of the statistical methods utilized.

Similar problems and questions arise in connection with attempts to measure shifts in the demand schedule or curve. Attempts have been made to measure such shifts in the same multiple correlation analysis wherein the curve itself is determined. The late Professor Schultz, in his book, "The Theory and Measurement of Demand," measured these shifts by including time as an independent variable in his equations. This is similar to the use of time trends of residuals as a catch-all in graphic multiple correlation, once rather popular but subsequently frowned upon even by those most liberal in their attitude toward correlation procedures. Space will not permit adequate discussion of the several objections to this practice, some of which have to do with technical statistics and others with the economic implications or uses to be made of the analyses. There are some reasons for doubting that the time trends representing so-called shifts in demand really do represent such changes. In any event, such measurements cannot be depended upon in connection with projections into the future, since there is nothing in the analysis itself to indicate when or why a change in degree or direction of trend may occur. Also, they do not help much in discovering the causal factors associated with shifts of a curve.

Although the use of time directly as a factor in correlation analyses may have definite advantages for certain purposes, the more commonly followed practice of using measures of economic conditions which fluctuate with the passage of time seems to be generally preferable. In such analyses, the regression lines representing the relation between the residuals from the average quantity-price relationship and the values of the economic factor presumed to be responsible for the shifts in demand may be taken as a measure of such shifts. It might be possible to convert the values of such an independent variable representing a demand factor into index numbers approaching a measure of changes in demand for the commodity by taking readings from the regression line and converting

them into percentage changes or index numbers. Obviously, the index numbers or other values representing the independent demand variable do not in themselves measure changes in demand, since the demand for different commodities is not affected in the same way by changes in such economic conditions.

One of the difficulties arising in connection with this method of measuring changes in demand is the fact that more than one independent variable representing factors influencing changes in demand may be included in the analysis. This difficulty may be avoided by another method of measuring changes in demand, using multiple correlation analyses in a different manner for this purpose. If the elasticity of demand were unitary, constant, and unchanging, shifts of the demand curve would be measured by changes in the total payments for or receipts from the sale of the commodity, inasmuch as changes in quantity would not affect the total amount paid or received. The effects on total value of changes in quantity would be exactly offset by the effects of the changes in price. Thus, shifts in consumer demand, or demand at retail, would be measured by changes in total consumer expenditures for the product, computed by multiplying the weighted average retail price by the total quantity taken by consumers. In practice, it would be difficult to obtain data representing exactly such prices or quantities, but approximations could be reached by using trade disappearance and available retail price data. For example, in the monthly Dairy Situation published by the Bureau of Agricultural Economics, Dr. Vial currently indicates the apparent consumer expenditures for butter and cheese computed in this manner. Such data are quite useful in following changes in the consumer demand for diary products.

The demand for any commodity, however, is likely not to be of constant, unit elasticity. This difficulty might be met by making corrections for changes in quantities marketed, in relation to the apparent elasticity of demand. First, the demand curve representing the average relationship between prices and quantities can be converted into a quantity-total expenditure (or total-value) curve. The change in total expenditures (or value) which is due to the change in the quantity marketed could then be ascertained by appropriate readings from the chart. This amount, subtracted algebraically from the total amount of change, would then represent the amount of change in expenditures or value due to the shift in

demand, provided that the elasticity of demand had not also changed. Conversion into index numbers of demand would be simple.

Of course, this procedure is open to the objections applying to other approaches, having to do with the general limitations of correlation analyses. Using such materials as are available, however, and offering the results merely as indicative of what might be done in measuring changes in demand by the method indicated, I have prepared figure 1, showing apparent changes in the demand for hogs, cattle and sheep and lambs as measured in this manner. It

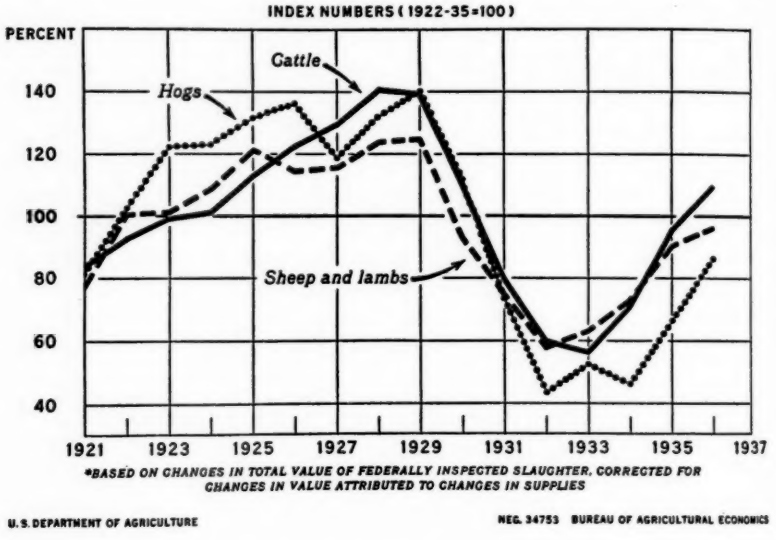

FIG. 1. INDICATED CHANGES IN THE DEMAND FOR CATTLE, HOGS, AND SHEEP AND LAMBS, UNITED STATES, 1921–36*

has also been interesting to compare the relative influence of year-to-year changes in demand as measured in this manner with the influence of supply, in effecting changes in the income received by producers of these products. Although, because of the limitations of the correlation analyses upon which they are based, as well as some of the theoretical considerations which have been discussed, these indications are not to be taken too seriously as far as the absolute values shown are concerned, they do point to the need for greater consideration of demand analysis in our research dealing with farm prices and income.

These alternative methods of obtaining a specific measure of changes in demand from multiple correlation price analyses have received less attention, and perhaps present less of a pressing practical problem, than the choice of a measure or measures of changing economic conditions which cause or are associated with the shifts in demand. As pointed out, these measures are not measures of changing demand, but of changes in the conditions affecting demand. Many differences of opinion exist with respect to the choice between and the proper use of these variables.

It is desirable, in this connection, to consider separately the factors associated with changes in final consumer demand, or demand for finished products in retail markets, and factors associated with changes in the demand in various wholesale markets for various types of farm products in different stages of processing or marketing.

The principal influences responsible for shifts in the final consumer demand schedule or curve for a commodity may be classified into 5 groups: (1) conditions which affect the desires of consumers for commodities, such as changing styles, advertising and living customs; (2) changes in the quantities available and prices of competing or substitute products; (3) changes in the composition and prices of all other items in the budget; (4) changes in the number and characteristics of the population; (5) changes in the purchasing power of consumers.

The first three are extremely difficult of measurement or quantitative analysis, and involve special problems which must be excluded from the scope of this discussion. I do not agree, however, with the tendency of some analysts to dismiss them as of minor importance.

Changes in total consumers' income reflect changes both in the number of consumers and in the purchasing power of individual consumers. Although this is a very rough method of taking into account the influence of population growth, other methods sometimes tried, such as the use of per capita production or consumption data, may be even more objectionable.

There are a number of measures ostensibly serving to reflect changes in the purchasing power of consumers: (1) total national income, (2) non-agricultural income, (3) total employees' compensation, (4) industrial workers' income (factory, mining and transportation workers), (5) factory payrolls. To describe and discuss the limitations of each of these measures would require more time

than is available for this discussion. It will be possible to point out only a few of the considerations involved.

My own reasoning leads me to believe that we need an entirely new measure of consumer purchasing power. The measure of national income at present may come closest to filling this need. The Department of Commerce series extends back only to 1929. It has been the practice to dove-tail this series into others available for earlier years, such as that given in the Brookings' publication "America's Capacity to Consume." All such attempts to splice series, of course, lead to difficulties. According to some students of the problem, we do not now have any adequate index numbers of national income. The Department of Commerce issues two series, income produced and income paid out. There has been an extended controversy over which of these two estimates constitutes the best measure. For technical reasons, the tendency seems to be to lean in the direction of income produced. Aside from questions relating to methods of computation, however, income paid out would appear preferable, since it purports to represent funds actually moving into the hands of individuals. Income produced becomes purchasing power in the hands of consumers only as the results of such production flow in the form of money purchasing power into the hands of individuals. Although one may argue for hours about the relative merits and demerits of these two measures of income, it is nevertheless true that as now computed they are highly correlated, and their regression line has a slope not far from unity. The controversy, therefore, appears somewhat academic, so far as the *relative* merits of these series as a measure of changing consumers' income is concerned.

Some persons have favored the use of non-agricultural income as a measure of consumer purchasing power, because it represents changes in the incomes of city people who consume farm products. This seems to ignore the fact that farmers as a group, representing more than a quarter of the nation's population and buying a considerable proportion of the foodstuffs they consume, are an important part of the total consumer demand for farm products. This argument, however, also is rather academic, inasmuch as the index numbers of non-agricultural income and of national income are very highly correlated, and the slope of the regression line is not far from unity.

A case might be made for the use of total employees' compensation, on the grounds that it is more inclusive than other categories

of workers' income, yet does not include items such as dividends which have less relation, theoretically, to the demand for foods. In view of the fact that the percentage fluctuations in total employees' compensation are very similar to the fluctuations in total national income, this contention also appears unimportant.

Since industrial workers' income represents only a slightly larger percentage of total national income than does factory payrolls, and has experienced very similar percentage fluctuations, any choice between these would appear to be mainly a matter of personal preference. The use of either one of these as a measure of changing consumer demand has been criticized, partly because of the fact that they exclude important elements in the population experiencing somewhat different income fluctuations. It has been pointed out, also, that the high correlation between factory payrolls or industrial workers' income and farm prices or income is partly a result of the fact that all are, in a sense, residuals.

For some farm products which are used as industrial raw materials, or which are relatively non-perishable and are traded on the futures exchanges, measures of consumers' income are not adequate or logical measures of changes in demand, partly because the latter result from fluctuations in traders' evaluations of future rather than present consumer demand conditions. Here, we must search for factors which logically influence or reflect traders' or intermediate buyers' judgments. For cotton, general industrial activity has been used as a measure of changing demand conditions. For flaxseed, index numbers of building activity have been used, because of the fact that linseed oil finds its largest outlet in paints. Other specific series logically connected for one reason or another with changes in demand for the commodities may be appropriate.

Index numbers representing changes in the average price of groups of commodities also have been used in the past quite generally, less frequently in recent years, as indications of changing demand. Among these are the familiar B.L.S. index of wholesale commodity prices, the B.L.S. index of retail food prices, and the B.A.E. index of prices received by farmers. The use of such price index numbers in multiple correlation analyses as demand factors has been severely criticized, sometimes from what has appeared to be a superficial standpoint.

Even though the price of the commodity being analyzed may be a part of the index, its influence on the latter in most cases is negligible. If there were no changes in the supplies of all of the commodi-

ties included in a price index, all of the changes in the index would be a reflection of changes in the demand for the several commodities, weighted according to their respective importance. Actually, changes in supply may be offsetting, or may be relatively small in degree, and thus have little effect on the movement of such an index. To the extent that this is true, net changes in the individual prices making up the price index are a result of similar directional shifts in the demand schedules for a large number of commodities included; and to that extent, changes in the index would be a very good measure of changing general demand conditions.

The foregoing reference to the use of general price indices brings up the highly controversial question of whether or not changes in price-quantity relationships associated with changes in the general price level should be considered as something entirely separate from changes in demand. In other words, should the demand schedule or curve be thought of always in terms of deflated prices? My own answer to this question is an emphatic "No," but space will not permit further discussion, despite the fact that it is a very important problem which gives rise to no small amount of really needless misunderstanding among price analysts.

There is, of course, a quite marked correlation among all of these index numbers of consumers' income, business activity, and group prices which are used as indications of changing demand conditions. I have assembled a number of scatter diagrams showing these relationships, which cannot be presented here because of the amount of space which would be required. For example, the coefficients of correlation, together with their standard errors, for several of the alternative measures are as follows: F.R.B. index of industrial production and national income, $.88 \pm .0442$; retail food prices and non-agricultural income, $.91 \pm .0439$; Carl Snyder's index of the general price level and national income, including the war years, $.95 \pm .0188$.

The relationship between some of these items, as disclosed by examination of the scatter diagrams, is very interesting, and many price analysts will find that the trouble in making such an examination will be well repaid. There are two statistical features of these relationships between the several demand indications which are of interest in connection with their use as independent factors in multiple correlation analyses: the slope of the regression line and the scatter about the line. If the slope of the regression line representing the relationship between two of the demand factors

is unity, and correlation approaches one, there would be little or no basis for a choice between them except on logical grounds. Any deviation of the slope of this regression line from unity would merely affect the relative slopes of the regression lines for the demand factors as used in multiple correlation price analyses, and hence in itself might not be a material factor in choosing between the two measures. Likewise, if the frequencies of the deviations of the observations from the regression line approximate a normal distribution, and if there is no serial correlation between these deviations, the lack of correlation between the two alternative indications of demand could be presumed to reflect merely random errors and would have no material effect upon the results to be obtained from use of the respective measures in multiple correlation analyses. The number of observations available for most of these factors prevents drawing any but tentative conclusions respecting this point, but there is some evidence that the distributions are not normal, and that the residuals are serially correlated; hence the choice made on *a priori* grounds will affect the results obtained from the use of these alternative measures in multiple correlation price analyses.

It is to be feared that in practice the choice among these measures of demand factors has been too frequently dictated by the results of experiments with different index numbers which have been inserted as independent variables in successive correlation analyses, rather than by *a priori* reasoning. An analyst may successively try indices of payrolls, industrial workers' incomes, nonagricultural income, national income, retail food prices, raw material prices, business activity, and so on *ad infinitum*. Just as, given sufficient time, a group of monkeys set to pounding a battery of typewriters might turn out a masterpiece of literature, so a group of statisticians (if the analogy will be pardoned) set to pounding a battery of calculating machines may by chance arrive at some very high correlations, if they have the patience to try out a sufficient number of different independent variables. The fewer the number of observations, and the greater the serial correlation of the data, the fewer would be the number of trials required to reach such an objective. The mere fact that a higher correlation is obtained with one measure than with another is not necessarily evidence that this measure is the best one to use as representing changes in demand or in the factors affecting demand.

To these and many other problems involved in measuring

changes in domestic demand must be added a host of others associated with changes in foreign or export demand, which are worthy of separate treatment. Altogether, the measurement of demand or changes in demand presents most challenging problems to the economic statistician, problems which will not be solved by any one person or in any one day.

DISCUSSION BY L. J. NORTON

University of Illinois

My comments bear upon marketing rather than the price analyst: How can statistical measurements of demand aid in answering the problems involved in selling farm products?

With his statements and conclusions regarding the measurement of historical relationships between quantities sold or available for sale and prices (which he calls measuring demand) and the measurements of the effects of various measures of consumers' income on deviations from these supply-price relationships I do not plan to disagree. One can certainly agree that these price-supply relationships may readily change with the passing of time. Certainly a shrinkage in per capita consumption or withdrawal of some class of consumers from the use of a product would cause such a shift—in theory at least. Also the use of any one of a group of highly correlated measures of income, as a measure of demand, should give substantially similar results.

Moreover, it appears to me that changes in price levels may operate on the price of individual farm products, independent of changes in consumer income, as Thomsen suggests. Such price changes may be so closely correlated with the indicator of consumer demand that is used, that no practical difficulty is encountered when the demand indicator is used alone and a measure of price level change omitted, particularly for livestock products. For staple products like grain or cotton this would not be true. However, even for livestock products the interpretation of results may be highly erroneous, if an index of consumer demand is used to explain why prices changed. We may find, for example, that changes in some measure of consumer income—non-agricultural income, for example, is highly correlated with the monthly sales or prices of some farm product and the conclusion drawn that the rise in income caused the changes in value of the product when, in fact, it was the change in the price level which caused both the changes in consumer income and in sales of the farm product. Since 1929 it is highly probable that changes in the price level have acted as an independent factor at many times. If there is a high correlation between price changes and a measure of consumer income, I can see no objection to using the income measure as an indicator of the non-supply influences which affect the price of the product. However, we should keep the logical relationships straight and not assign causal influence to a mere indicator. One can suspect that every Outlook Report written in the last ten years has failed to make this logical distinction between changes in price levels

and in consumer incomes. In some cases this has led to various erroneous conclusions.

We have at this time the very interesting fact that average farm prices have failed to follow the increase in national income upward during the last six months. One may hazard a guess that while this in part reflects more abundant supplies, it also traces to some fundamental weaknesses in the world price structure—independent of income changes. These may be summed up in the expression—uncertainty, which causes reluctance on the part of many to take investment or speculative positions in commodities and causes liquid wealth to be hoarded in one way or another. In many cases this factor is wholly independent of changes in income. Certainly under such conditions price level factors need to be considered in attempting to measure demand.

It seems to me that the measurements of price-supply relationships which Thomsen discusses in the early part of his paper do not, in fact, measure demand as he defines it: "The schedule of quantities which buyers are willing to take at a specified series of prices, or the schedule of prices which buyers are willing to pay for a series of quantities, in a given market at a given time." Certainly a chart showing net relationships between quantities available for sale at different periods of time and the average prices at which these commodities sold or were withheld from market—is not a measure of the price at which different quantities would sell, at a given time. I am sure that Doctor Thomsen agrees that such curves can at the most be merely indicators of what demand curves would look like if data were available to meet his definition. Would it not be better to call such curves price-supply or price-stock curves and not assume the fiction that they measure demand?

Whatever we may call such relationships surely they should be measured, and as accurately as possible, particularly as they are now so widely used in connection with public policy. They appear to be the corner stone of our present agricultural policy which subordinates all possible objectives to attempting to make stocks conform to the amount which gives the right price on a price-stock curve. In fact we have some sort of an approximation to one such curve—that for corn, written into a law, although it should be pointed out that one important element in any stock, namely the carryover, is left out in the relationship as set out in the law. This seems incredible, for the rankest amateur in statistical determination would not have made such an omission.

However, it seems to me that students of demand can better concentrate on the factors which influence changes in the level of demand for particular products. At the outset I indicated an interest in the question from the marketing standpoint. The marketing man is interested in changes in prices, or in price relationships, during the marketing period rather than the level of prices which the price-supply relationships indicate. A large group of persons engaged in marketing are not interested in actual prices at all, but in price spreads or differences. In fact, that is the typical position of the so-called middleman. A complete analysis of prices and demand needs to include a study of factors influencing price differ-

ences. In conversation with a grain buyer for a large milling company last fall he said "Your analysis of what would happen to wheat prices made last June was correct, but we are not interested in wheat prices, but in the basis." In other words, he was interested in the changes in relationship between cash and future prices rather than in actual prices. This view sums up the interest in price analysis of many in the grain trade and presumably in the cotton and other trades where hedging markets are used.

In measuring changes in demand for farm products, it is important to distinguish between the groups of products for which the indicators are physical factors and those for which they are value factors. Doctor Thomsen suggested this fact. Obvious examples come to mind: some physical factors which indicate changes in demand are: (a) corn—numbers of livestock; (b) soybeans—production of cottonseed; (c) wheat—production in foreign countries. Value factors, such as changes in spendable income, indicate changes in demand for butter, meats, eggs or in general for the animal products. The staple commodity trades for example grain and cotton, have long emphasized accurate estimates of physical factors and the importance of getting accurate and timely figures on these physical factors must never be underestimated in attempting to measure demand. At this time accurate estimates of livestock numbers and of the Argentine corn crop are of paramount importance in estimating demands for American corn in 1939.

For livestock and livestock products, estimates of the monthly values of marketings of specified products for a few months in advance would be useful for marketing purposes. Doctor Thomsen referred to Doctor Vial's estimates of the monthly value of butter sales. Such estimates would, of course, involve estimates of consumer incomes and quantities available for sale. It seems to me that detailed budget studies of spendings at different income levels and estimates of probable incomes of groups with different income levels should be useful in making such estimates. These could be checked against estimates based on probable marketings multiplied by probable prices determined in other ways. Such monthly values related to quantities sold should give approximate indication of changes in demand and over a period of time (long enough to average out changes in the level of demand) would measure the elasticity of demand in its most useful form, namely, changes in total value with variations in quantities available for sale.

Such studies would open up a large field as to the actual nature of the market for individual products and permit detailed studies of the demands for them by consumers at different income levels. They should help to bring out the facts about the existence of multiple price systems in actual retail markets which would demonstrate that the recent discussion of a two-price system represents a highly simplified view of markets. This would be useful in leading to more realistic thinking. Demand studies of this type would certainly be useful to persons interested in marketing and if a strictly amateur statistician may hazard an opinion they would yield much more useful results in the long run than the much discussed, much used, and much abused multiple correlation method.

CONSUMERS' INCOMES AND DEMAND FOR CERTAIN PERISHABLE FARM PRODUCTS

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I shall confine my remarks mostly to two phases of the relation of income to demand, first, emphasizing differences in demand between groups at one time, and, second, changes in demand from time to time.

In these days of alleged surpluses of many perishable farm products, the theory seems to be rather widely accepted that if all growers would raise the "quality" of their products, and if only top-grades and "qualities" were permitted to go to market, most of our marketing difficulties would be solved. That theory must necessarily be based upon certain violent assumptions, viz., (1) that the cost of delivering a top grade or quality product is no more than for a lower grade or quality; (2) that incomes of all families are equal, or (3) that family incomes have no effect on consumer demand.

Few producers are ignorant of the fact that it costs more to produce "high quality" products and that it requires more careful sorting, and packaging, to make up the top grades than the lower grades. The very theory back of better grading and improving qualities is that a higher net return will offset increased costs.

It is comparatively easy to demonstrate that family incomes are not equal. It was estimated that in 1929 (the year of greatest "prosperity"), 22 per cent of the families in the United States had annual incomes of less than $1,000, 38 per cent had incomes between $1,000 and $2,000, and a total of 78 per cent were below the $3,000 level.[1] In 1938, the United States Bureau of Labor Statistics issued a report on annual incomes of urban families in 32 cities.[2] An annual income of $2,500 per year has been advocated by some economists as the approximate minimum income on which families can buy such qualities and quantities of food as they may desire. In none of the cities surveyed by the Bureau of Labor Statistics did families with incomes of $2,500 or more per year exceed 28 per cent of the population, and this relatively high

[1] Agricultural Adjustment Administration, *Consumers' Guide*, III, (24): 14, January 25, 1937.

[2] United States Department of Labor, Mimeographed report, "Urban Study of Consumer Purchases," December 20, 1937, and February 8, 1938.

percentage was reached only in New York City. The National Resources Committee has recently published an estimate of family incomes in the United States for 1935–36.[3] According to this estimate, only 11 per cent of the families were in the $2,500 or more group, which may be roughly designated as the "quality" market.

There seems, therefore, to be substantial agreement that there are wide diversities in income, and that over three-fourths of the families in the United States have relatively low incomes. Why, then, should the assumption be made that there are not roughly equivalent diversities in demand for grades, qualities, and services. It would seem a reasonable interpretation of these data that only a small proportion (not over 25 per cent) of our population can afford to use "high quality and well graded" products, even if they so desired.

The assumption that Mrs. Consumer wants the best qualities at all times likewise seems open to question. A year or so ago, Mrs. B. W. Hendrickson, of the New York State Federation of Women's Clubs stated the housewives point of view rather clearly when she said:

"A mistaken idea is that women always want the best. This is true to a certain extent in the clothing and house furnishing fields, but *it is not true in foods*. Consumers want to be assured of wholesomeness and safety. The best is reserved for company or special occasions. For daily use, a lesser grade is all that the average consumer can afford."

It is unfortunate that there are so few studies of what consumers actually buy, related to family income as well as grade, quality, and service. In the final analysis, the only "demand" worthy of much consideration is that expressed in actual purchases. If it is desired to know what grade of automobiles economists "demand," it will do little good to ask what they prefer, but it will be highly informative to know what they actually own and drive.

A few examples of actual consumer performance may serve to illustrate the divergence between theory and practice. During 1936–37, licensed inspectors employed by the New York State Department of Agriculture and Markets, and trained in grade standards, examined potatoes sold in over 1500 retail stores in 13 cities in New York State. If the "quality" theory were correct, a large proportion of the potatoes purchased should have graded U. S. No. 1 or better. The facts are that only 3 per cent of the potatoes, sold in these stores, graded U. S. No. 1; 35 per cent graded

[3] Report of National Resources Committee, *The New York Times*, September 4, 1938.

90–94 per cent No. 1 (which made them No. 2's); 47 per cent graded 75 to 89 per cent No. 1 (which made them range from a good No. 2 to 10 per cent below a No. 2); and 15 per cent were definitely in the "cull" class, according to grade standards.[4]

At Cleveland, Ohio, in 1936, out of 1190 consumers who actually bought potatoes in several hundred retail stores of all types, less than 5 per cent bought U. S. No. 1's or better, about 9 per cent bought U.S. Commercials, 42 per cent bought U. S. No. 2's, and almost 44 per cent bought potatoes classed as culls under accepted grade standards.[5]

At Rochester, N. Y., in 1937, only 28 out of 625 consumers (or 4.5 per cent) bought U. S. No. 1 potatoes or better, while 11.5 per cent bought U. S. Commercials, about 34 per cent U. S. No. 2's, and over 50 per cent purchased potatoes classed as "culls," on the basis of New York State grades.[5]

To determine whether consumers did not buy the highest grades because they were not available, an experiment is now being conducted in cooperation with chain store systems in Buffalo and Rochester, N. Y. Circumstances made it necessary to limit this study to chain stores, which are mostly found in medium and high income neighborhoods. The results will not adequately reflect demand of consumers in lowest income areas. This study will not be completed for some time, but a small amount of preliminary data is available. Out of 3,324 pecks of potatoes sold in six stores during four weeks, almost 24 per cent were of U. S. No. 1 grade, minimum size 2 inches; about 22 per cent were U. S. No. 1 grade, minimum size 1¾ inches; 10 per cent were U. S. No. 1, size B (1.5 to 1.75 inches in size); over 23 per cent were 80 to 85 per cent No. 1 (or a U. S. No. 2); and about 21 per cent were 65 to 70 per cent No. 1 (but would be classed as "culls" under the New York State grading law).[6] It should be noted that one-fifth of these consumers paid as much for culls (65 to 70 per cent U. S. No. 1) as they did for "Red Label" No. 1's, and nearly one-fourth paid more for No. 2's (80–85 per cent No. 1's) than for "Red Label" No. 1's.

Dr. Spencer and his associates advise me that insofar as Board of Health rules permit, there is considerable variation in demand for grades of milk in New York City. In December, 1938, the top grade, "Certified," accounted for less than 1 per cent of sales, but about 14 per cent of the sales were in the next grade ("Grade A"), and over 85 per cent of sales were "Grade B" or the lowest grade.[7] No lower grades of fresh fluid milk are permitted to be sold in New York City, but it is more than likely that

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[4] Findlen, P. J., H. Duncan, and S. Duncan, "Potato Inspections in Retail Stores," *Mimeographed Report A.E. 206*, New York State College of Agriculture, in collaboration with New York State Department of Agriculture and Markets, May, 1938.

[5] Unpublished preliminary reports by Findlen, P. J., Mrs. A. Hotchkiss, and E. V. Hardenburg, New York State Colleges of Agriculture and Home Economics, 1937 and 1938.

[6] Unpublished preliminary data by Findlen, P. J., New York State College of Agriculture, 1938.

[7] Unpublished data by Spencer, Dr. Leland, and associates, New York State College of Agriculture, 1938.

cheaper forms of milk, such as evaporated or condensed milk in cans, take the place to an appreciable extent of lower fluid milk grades.

According to Liston, butter consumers in Burlington, Vt., generally sought a mild flavor and a medium salt content, but strongly flavored, highly-salted butter was preferred by some of the low income housewives because it "went further."[8]

Gans, in studying the relationship of quality to retail price in New York City, found that the prices of eggs are adjusted to variations in quality with sufficient precision to justify classifications of eggs into more than four grades.[9]

It has generally been assumed that grade standards, suitable for wholesale purposes, carried through and were adapted to retail and consumer purposes. This is probably true in some cases and not in others. In Cleveland, Ohio, and Rochester, N. Y., Dr. Hardenburg, of the New York State College of Agriculture, analyzed the same potatoes as they arrived in the railroad car, and later as they were being sold in the retail store. It was found that bruising was the most serious single defect in all potatoes offered for sale in the retail stores, and that damage from bruising increased from 4 per cent in the car to almost 13 per cent in the retail store, a threefold increase in damage. Under U. S. grade standards, potatoes that graded U. S. No. 1 in the car became definitely U. S. No. 2 grade in the retail store.

Confidential sales reports from a large New York City chain store likewise raise questions as to how far it pays to grade various fruits to meet certain standards. On December 17th, this chain system offered:

Apples, Delicious, size 80's and size 88's, both at 4 for 15 cents.
Apples, Rome Beauty, size 80's and size 88's, both at 5 for 15 cents.
Grapefruit, sizes 64's, 70's, and 80's, all 3 sizes at 3 for 10 cents.
Oranges, California, sizes 200's and 220's, both at 12 for 25 cents.
Oranges, Florida, sizes 150's and 176's, both at 12 for 25 cents.
Tangerines, sizes 176's and 216's, both at 12 for 10 cents.
Pears, sizes 120's and 135's, both at 4 for 10 cents.

These were routine, and not unusual sales.

It would seem as though growers might be justified in asking why they should grade potatoes to standards which may be destroyed from car door to retail floor. Likewise, it may be questioned why fruit should be subjected to costly separation into a multitude of sizes in packing houses at shipping point, only to be lumped to-

[8] Liston, Margaret I., *Vermont Agr. Exp. Sta. Bul.* 415: 9 and 37, April, 1937.
[9] Gans, A. R., *Cornell Univ. Agr. Exp. Sta. Bul.* 597: 52, April, 1934.

gether at the same price in retail stores. It is probable that existing grade or quality standards are reasonably well adapted to such relations as growers or shippers have with the wholesale trade, but, as yet, there is little available evidence to indicate what grade characteristics consumers want and are willing to pay for.

Growers have repeatedly challenged the assertion that it pays to leave lower grades or qualities at home and have often insisted that it is net return on the entire crop that is important, and not merely on that share which is of "high quality." It is evident that consumers do not and cannot restrict purchases to the higher priced better qualities or grades, but for economic or other reasons often buy lower grades when given the choice.

If grades are to be the means both of increasing net farm income and of consumer satisfaction, it seems obvious that such grades must bear definite and clearcut relationships to the economic desires of both dealers and consumers, and must recognize (first) differences in levels of consumer purchasing power; (second) differences in preferences of individuals; and (third) differences in the purposes for which products may be used and the qualities needed for each purpose.

There has been much discussion recently of the need for a "two-price" system, which in some manner, not yet revealed, would enable people with low incomes to consume surplus crops. In my opinion, the most important part of the "two-price" idea is that it recognizes frankly that something is wrong and that an urgent need exists for some method which will bring families with low incomes into the picture as consumers. This would seem to call not for a "two-price" system, but for a multiple price system, the characteristics of which would probably be a far wider choice of grades or qualities, as well as of more or less necessary services. In essence, it means enabling consumers in any walk of life, but especially in low income groups, to buy produce with a minimum of services and "trimmings" which people in higher income brackets are able and willing to pay for.

I am advised that store sales of fluid milk in New York City have been increasing rapidly during recent years, while sales on delivery routes have declined. Evidently, many consumers prefer to lug their milk home from a retail store and save the three or more cents difference per quart. A survey of 1800 retail stores in New York City last summer indicates a widespread doubt in the mind of re-

tailers whether wrapping of apples and oranges is worth anything as a sales factor. Many retailers consider these wraps a downright nuisance. It would be interesting to ascertain how many consumers, if given the choice, would prefer oranges nicely colored and wrapped, or more oranges without the trimmings at the same price. The way to dispose of surpluses, or products not in surplus for that matter, is not to limit market offerings to those of highest grades and qualities, and thus literally reduce consumption, but to eliminate every unnecessary service or cost so that low income families can buy and consume the product.

Changes in Income and Total Consumption

The prevalence of so-called "surpluses" in many agricultural products has led many to believe that a substantial increase in consumer incomes or purchasing power is the only permanent solution of the marketing problem. There seems to be plenty of evidence to support such a view. Dr. Hopper, in studying the Albany produce market in 1930, found that the amount spent for fresh fruits and vegetables increased rapidly as the annual family income rose.[10]

Dr. G. W. Hervey, in 1936, observed that consumption of oranges in Baltimore and St. Louis increased steadily as the weekly income per capita rose.[11]

Descartes and Pacheco, in 1937, observed definite increases in per capita consumption of certain but not all vegetables in Puerto Rico, as family income increased.[12]

Spencer has shown that milk receipts (consumption) at New York City are closely related to business activity in the United States.[13]

Sprague, Sturges, and Radabaugh found that the quantity of poultry purchased was directly related to family incomes.[14]

Waugh, Howe, Cowden, and Waite have shown that per capita

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[10] Hopper, W. C., *Cornell University Agric. Exp. Sta. Bul.* 586: 8, 16, and 17, March, 1934.

[11] Agricultural Adjustment Administration, *Consumers' Guide, III,* (*22*), "Who Eats Our Oranges," a digest of study by Dr. G. W. Hervey: 10 and 11, November 30, 1936.

[12] Descartes, S. L., and S. D. Pacheco, *Puerto Rico Agric. Exp. Sta. Circ.* 107 June, 1938.

[13] Spencer, L., Mimeographed report, "Milk Prices in New York Under Federal and State Orders," *A. E. 234:* 9. October, 1938, New York State College of Agriculture.

[14] Sprague, G. W., A. Sturges and J. H. Radabaugh, *Misc. Pub. 283:* 68. *U. S. Department of Agriculture.*

consumption of milk increased rapidly as annual income rose from below $300 to above $700 per capita (or approximately the $2,500 per family level).[15] Waugh, Howe, and Waite also have indicated substantial increases in consumption of cream as income rose to above $700 per capita.

Miss Stiebling, in analyzing food records of urban families found that average purchases of eggs, cream, ice cream, lamb, poultry, fruits and succulent vegetables were 2½ or more times greater in the high income groups than in the lowest income groups. Miss Stiebling also found that "families on the lower expenditure levels bought less food and cheaper food than families in higher income groups."[16]

The Bureau of Agricultural Economics has shown the close relationship existing between incomes of industrial workers and cash farm income received for dairy products, poultry and eggs, fruits and vegetables, livestock, and other products, summarized as follows:

> "Changes in the purchasing power of consumers are a principal factor influencing prices of farm products. Since changes in prices are largely responsible for changes in farm income, the latter bears a close relation to national income and the income of industrial workers. Farmers and others engaged in other industries are affected similarly by the periodic ups and downs of industrial activity. This is illustrated by the marked decline in incomes of industrial workers and cash farm incomes from 1937 to 1938."[17]

The evidence seems fairly conclusive, therefore, that if all family incomes could be raised substantially, the problems of disposing of many perishable products would largely be solved.

An equally important conclusion which may be drawn from this evidence is that many of the difficulties in the perishable food business have their direct counterpart in the general business situation. It suggests very definitely that the basic difficulty is too low a price level and an unbalanced price structure. Those who insist that overproduction or "surpluses" are the cause of all this distress,

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[15] Waugh, F. V., et al., "Consumption of Milk and Dairy Products in Metropolitan Boston in December, 1930."
Howe, C. B., and W. C. Waite, *New Jersey Agric. Exp. Sta. Bul. 506, June, 1930.*
Cowden, T. K., and A. Sturges, Mimeographed Report, "The Consumption of Fluid Milk and Other Dairy Products in Philadelphia, Pa.," June, 1934.
Waite, W. C., and R. W. Cox, *Minnesota Agric. Exp. Sta. Bul. 311, October, 1934.*

[16] Stiebling, H. K., "Income Regulates the Diet." United States Department of Agriculture, *The Agricultural Situation, 21* (6), 19 and 21: June, 1937.

[17] *U. S. D. A., Bur Agr. Econ., Outlook Charts, 1939,* "Demand, Credit, and Prices," p. 3.

will have to explain why, for example, potato crops of identical size (namely, 2.5 bushels per capita) brought $2.26 per 100 lbs. in 1926; 96 cents in 1931; 94 cents in 1932; and $1.18 in 1935. The size of the crop did not vary at all during those years, but the general price level dropped from 139 to 95, and then bounced back to 117, from which position it has since receded. Instability of the general price level seems always to have been a major problem of agriculture and industry. The most promising way out of the dilemma would seem to be to use every possible means of raising the price level, even out maladjustments between economic groups in our population, and enable farmers to buy city made goods so that employment may be increased and consumers' incomes raised.

Some Products Will Not Benefit

It should be recognized, however, that if all family incomes are increased, it may actually be detrimental to the welfare of producers of certain commodities.

In Puerto Rico, for example, Descartes and Pacheco found that per capita consumption of sweet potatoes actually declined as family income rose, being replaced by more expensive and less common local or imported vegetables.

In a survey of actual consumer practices in Cleveland, Ohio, in the spring of 1936, families with less than $750 annual income used 178 pounds of potatoes per capita, while those with $2,250 or more income used only 119 pounds, a decrease of 33 per cent.

In Cleveland, Ohio, and Rochester, N. Y., during the winter of 1936–37, consumers with incomes of $1,000 per year used 32 per cent more potatoes than those with incomes of $3,000 or more per family. This seems to indicate that increasing family incomes would not help dispose of potato surpluses, but would actually work in the opposite direction.

Research workers in dairy products have frequently indicated that there are marked possibilities for increasing consumption of fluid milk in the lowest income group, but that there is little evidence to indicate that those in higher brackets can be induced to increase fluid milk consumption. On the other hand, there do seem to be good opportunities for increasing cream consumption in practically all income classes.

Stiebling found that the demand for table fats, other than butter, apparently declined sharply with increasing amounts of money available for food.

When the family income increases, it seems likely that the desire is for something different rather than for more of the same, so staple foods are likely to suffer while foods in the semi-luxury class, such as citrus and other fruits, cream, poultry, meats, less common vegetables, etc., will probably benefit most.

Cut Costs at Country Points

There is one other basis of attack, not as promising as those discussed heretofore, but which might be followed while action is developing as above recommended. What I have to suggest is neither new nor novel, but perhaps merely neglected. Dr. Spencer tells me that in New York State the cost of handling milk at country points has been reduced about 50 per cent during the past 10 years. Comparatively few studies have been made of costs of handling perishable farm products at country points or elsewhere along the line from grower to consumer, and much more research is needed in this field, to set up standards for those who do want to reduce costs. Hamilton, in Florida, found a variation of 58¢ to $1.56 per box in handling oranges from the tree to the car; in New York State, the cost of handling potatoes at country points varied from 14¢ to 43¢ per hundredweight. Other illustrations are doubtless available. Insofar as net returns to the grower are concerned, a reduction of 5¢ to 10¢ a package or pound in handling or selling costs at the country point is just as good as a 5¢ or 10¢ increase in price in the city. But reducing costs may be a more effective way of stimulating consumption. Chain store operators in New York City advise that as little as one cent a package difference in retail prices builds up volume sales at an amazing rate in their self-service stores. Growers have the right to expect efficient distribution of their products in large terminal markets at lowest possible costs. It is entirely possible, however, that more attention to costs of assembling, grading, packing, and selling at country points would reveal opportunities for increasing net returns to growers without running the risk of reducing consumption further.

The annual report of Secretary of Agriculture Henry Wallace for 1938 was received subsequent to the preparation of this paper.[18] The following remarks seem pertinent:

"No one can reasonably object to giving the consumer fancy packages and more services if he wants to pay for them. But if processors, whole-

[18] United States Department of Agriculture, *Report of the Secretary of Agriculture, 1938*, page 97.

salers, and retailers add expensive things when consumers do not need or want them, the cost will largely fall on the farmer. Consumers should have a chance to buy good food without expensive services—at a price that reflects the savings."

"We need to keep our pushcart markets and curb markets. We need more low-priced retail stores which will handle bulk foods and avoid expensive packaging. We need more accurate labeling and grading so the consumer can buy more intelligently. We need to avoid too much insistence on only first-quality foods. All foods should meet basic health requirements; but thousands of families would rather have grade C food at a low price than grade A food at a high price, and thousands of farmers have grade C food to sell. Our marketing system must efficiently meet the needs of the poor as well as of the rich."

DISCUSSION BY R. K. FROKER

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Early in his paper Professor Rasmussen questions "quality improvement" as a broad program for aiding farmers. There is considerable merit to this objection, but it does not follow that the recommendation for high quality products is necessarily based on any "violent consumption" of lower or equal marketing costs for high quality products as compared with low quality products, or that the incomes of all families are equal, or even that family incomes have no effect on consumer demand. It would seem to me that the recommendation to farmers that they produce higher quality products merely assumes that such a program will net them more money than otherwise. Other factors such as the influence of quality on production, the elasticity of demand, total quantity offered for sale might be the determining factors.

In the case of potatoes one-fifth of the consumers paid as much for culls as they did for Red Label No. 1's and nearly one-fourth paid more for No. 2's than for Red Label No. 1's. This would suggest a lower marketing margin for the higher grade potatoes since it is unlikely that producers were paid less for the better grades. A similar situation is evidenced in the data in table 5 where culls represented 44 per cent of the total, and had a higher retail price than U. S. No. 2's representing 42.5 per cent of the total. These figures may not be typical, but since they are among the data presented by Professor Rasmussen they do raise some question as to the validity of his assumption with respect to marketing costs on different grades of the same product.

I would agree, for the most part, with the statements on existing grades and standards and with the statements on the desirability of reducing marketing costs. Obviously, however, one should not speak of the full benefits of lower marketing costs going to the producer and at the same time claim that a reduction in marketing costs will stimulate consumption. Further, one should not take the statement of chain store operators at face value as to the "amazing effect" of the price reduction of 1¢ per package on volume of sales as being an indication of consumption changes

unless one also has some measurement of the total sales for the trading area for a reasonable period of time.

The "two-price" idea is supposed to "recognize frankly that something is wrong and that an urgent need exists for some method which will bring families with low incomes into the picture as consumers." I wonder how these low income families existed up to now if they were not consumers. Most schemes for increasing consumption contain the possibility of shifting consumption particularly as applied to food products. The two-price idea has been advanced primarily as an aid to agriculture. If it benefits consumers, or perhaps more correctly, if it benefits some consumers—all to the good, but we should remember that consumers, as a group, are expected to pay producers more for the product—not less—under the two-price plan.

The notion that "the only demand worthy of much consideration is that expressed in actual purchases" might be interpreted in more than one way. If it refers to the use of consumer questionnaires as a means of measuring demand as compared with actual sale records most of us would agree. However, where it is necessary to use a demand curve, which means a whole series of demands, then it is nearly impossible to have all of these demands based on actual purchases. When we think of the effect of quality changes we are probably thinking of two or more demand curves, each of which is a series of demands. The very nature of the problem prohibits all analysis of demand being based on actual purchases. We need to exercise some caution in the interchange of the two words "preference" and "demand" since the latter correctly implies a price relationhsip, while the former does not.

About one-fifth of the paper is given to the report on the general contention that "a substantial increase in consumer incomes is the only permanent solution to the marketing problem." This, in effect, is to say that the marketing problem is, after all, something more than a marketing problem. I am inclined to believe that the error lies in assuming, in the first place, that all so-called surpluses are marketing problems. In some industries at least they would be looked upon as production problems. The marketing end of the industry can not be expected to do the impossible in disposing of surpluses at attractive prices. The proposed solution of this so-called marketing problem is to raise the price level and to level out incomes. If this is the correct solution then I am quite certain that it is not within the ordinary sphere of marketing. It is further stated that this remedy will "enable farmers to buy city-made goods so that employment may be increased and consumers' incomes increased." I can not help but raise the question as to which part of our production system broke down—the factory or the farm—and just how effective should we expect an increase in the income of farmers who normally receive something like 10 per cent of our national income to be upon those receiving the other 90 per cent.

LONG-TIME PRICE CHANGES AND FARM OPERATION

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The long-time price changes with which farmers are particularly concerned may be grouped as follows:

1. Changes in the general level of all prices.
2. Changes in relative prices of
   a. Items entering into cost of production and cost of living.
   b. Farm products.
3. Cycles in the purchasing power of farm products.

The General Price Level

During the lifetime of the writer, a fluctuating general price level has been the most important single factor affecting the profits of farmers. All of the business experience of the men of his generation has been obtained during a period of violently changing prices. Beginning in September 1915, when the wholesale prices of all commodities stood at 100, there was a rapid rise in prices which culminated in the peak of 244 in May 1920.[1] From this high point, prices fell to an index of 141 a year later. Prices remained relatively stable until the end of 1929, when a new decline set in carrying to the low point of 87 in February 1933. After the United States left the gold standard on April 19, 1933, prices rose to 129 in April 1937 and have since fallen to 113 in November 1938.

Most of the young men who are now farming have been less successful than their fathers, not because they are poorer farmers, but because they were born at the wrong time. From January 1900 to September 1915, a period during which their fathers were farming, the extreme variation in the monthly index of wholesale prices was from 79 for three months in 1901 to 107 in April 1910. This was a period of relative price stability which has not been approximated since.

To illustrate the effect of a changing general price level on persons engaged in agriculture, we may turn to a summary of labor incomes and hired men's wages in New York State. Average labor incomes have been determined for a group of farms keeping complete cost accounts, and also for a much larger group from whom

[1] Monthly price indexes, *Cornell Memoir 142* and Farm Economics.

survey records have been obtained. The cost-account group represents much better than average farmers. Many of them are college graduates, and their businesses are larger and better operated than average. The farms for which survey records have been obtained represent more nearly average conditions. Over a long period of years, wages paid to hired men who receive privileges or board in addition to cash, and labor incomes average about the same. During 1907–13 and 1914–19, the average labor income on "surveyed" farms was greater than hired men's wages. As a result of the price decline of 1920–21, labor incomes fell although hired men's wages rose. By 1925 considerable adjustment had been made to the new price level, so that labor incomes were not greatly below hired

TABLE 1. LABOR INCOME AND HIRED MEN'S WAGES IN NEW YORK STATE

Years	Number of Records		Average Labor Income		Hired Men's Wages*
	Cost Accounts	Surveys	Cost Accounts	Surveys	
1907–1913		3,053		$541	$292
1914–1919	197	4,562	$1376	459	397
1920–1924	157	2,080	273	186	545
1925–1930	370	7,192	939	444	579
1931–1932	136	2,392	−1580	−330	364
1933–1936	344	2,602	1012	294	291
Total or Average	1204	21,881	$ 702	$355	$417

* Annual cash wages paid to hired men who were boarded. Computed from monthly wages as reported by the United States Department of Agriculture.

men's wages during 1925–30. In the disastrous years of 1931–32, labor incomes averaged less than nothing, but hired men received higher wages than before the war—if they had a job. During 1933–36, labor incomes and hired men's wages averaged practically the same.

The average labor incomes on the "cost-account" farms are a magnified version of the incomes on the "surveyed" farms. When money was being made, they made more, and when money was being lost, they lost more.

The major reason for this relationship between farmers' incomes and the price level is the unbalanced price structure which always results from fluctuations in the general price level. When the general price level changes, basic commodity prices change very quickly. Retail prices, wages, taxes, and debts change very slowly.

Most farmers sell basic commodities and pay out money for wages, taxes, debts, and commodities at retail. Therefore, they are benefited by a rising price level, and adversely affected by a falling price level.

This is brought out by a comparison of two indexes prepared by the United States Department of Agriculture, one entitled "Prices received by farmers" and one entitled "Prices paid by farmers for

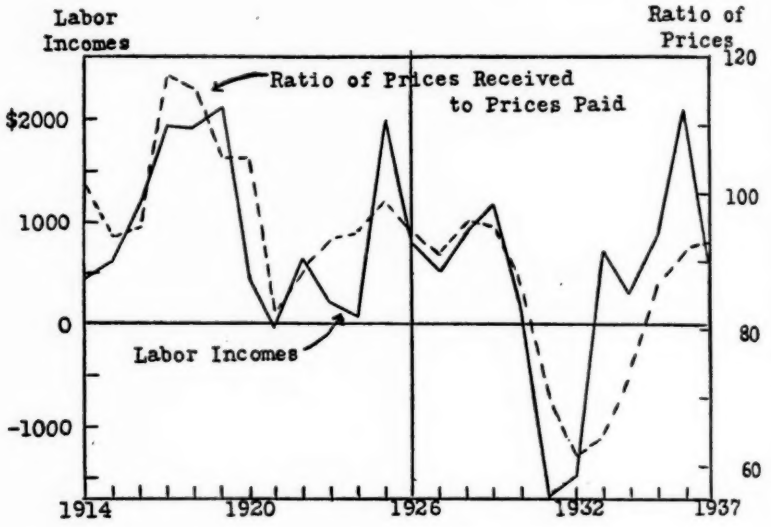

FIG. 1. LABOR INCOMES ON N. Y. COST-ACCOUNT FARMS AND RATIO OF PRICES RECEIVED BY FARMERS TO PRICES PAID BY FARMERS IN U. S. (1910–14 = 100)

commodites used in living and production." From 1910 to 1915, these two indexes were relatively stable, and in approximate equilibrium. In the price rise of the war period the prices received by farmers rose fastest. With the decline after the middle of 1920, they fell fastest. By 1925, approximate equilibrium was again established between these two indexes. But, when the price decline of 1930 began, farm prices again fell fastest and farthest and reached a low of 65 in 1932, compared to 107 for the "prices paid by farmers." Again history repeated itself when "prices received" rose faster than prices paid after 1933, and the two indexes were approaching equilibrium in 1937.

The ratio of "prices received by farmers" to "prices paid by farmers for commodities" gives a composite picture of the price relationships with which farmers have been confronted. (It must be remembered that this index of prices paid by farmers includes only *commodities*, and therefore omits the important items of taxes, debts, and wages paid to hired men.) A comparison of this ratio with labor incomes on cost-account farms in New York is shown in figure 1. Since this is a comparison of a price ratio for the entire United States with labor incomes for a group of farms in one state, and since farmers' incomes are dependent on yields as well as prices, a perfect correlation between the two series would not be expected. The close relationship indicates that this price ratio is one of the most important factors causing year-to-year variations in farm incomes.

Changes in the general price level, and the resulting unbalanced price structure, cause variations in the relative importance of some of the factors which account for variations in incomes between farms in the same year. Two of the most important of these factors are size of business and rates of production. The relation of these factors to profits in a period of stable prices, and in a period of falling prices is illustrated by a study of more than 2000 New York dairy farms.[2]

During the 1925–29 period when prices were relatively stable, labor incomes were higher on the farms with the larger herds. The advantages of relatively large farm businesses have been repeatedly emphasized by farm management studies. In 1930 to 1932, the average labor income of each group of farms was negative, and the farmers with the most business had the largest *minus* labor incomes. When the price situation is extremely unfavorable, large businesses may be a means of losing more money in spite of their efficiencies of operation.

In both periods, the farmers who sold the most milk per cow were the most successful. However, high production was of less advantage when prices were falling. In periods of declining prices, when farm prices fall faster than production costs, high yields per acre and high production per animal must be obtained cheaply in order to be profitable. Some of the farmers included in this study ob-

[2] Reported in Cornell Mimeographed Publication A. E. 233 by L. C. Cunningham.

tained their high production per cow by expensive methods, and thus lowered the average labor income for the group.

The results of farm management studies have generally agreed in indicating that the smaller and less intensive farm businesses are in the best position to "weather the storm" of a declining price level. But a farm business must be organized on the basis of a long period of years. Even if a farmer could accurately foresee the movements of the general price level, it would be difficult to completely adjust his business to be in the best position. Very few farmers can quickly make drastic changes in the size and intensity of their businesses. A farmer must organize his business in what appears to be the best system for a period of years, and take his chances on the price level. As long as our monetary system permits drastic price declines, it will be desirable to have a somewhat more conservative farm organization (both as regards size and intensity) than would be desirable if a stable price level were assured for the future.

Some of the more important effects of long-time changes in the general price level as applied to farm operations might be briefly summarized as follows:

Rising general price level	Falling general price level
Prices of farm products rise faster than prices of commodities farmers buy.	Prices of farm products fall faster than prices of commodities farmers buy.
Wages rise slower than farm prices.	Wages either do not fall, or fall slower than farm prices.
Large-sized farm businesses are encouraged, even if the operation is relatively inefficient.	Large-sized farm businesses are discouraged, and often become bankrupt unless the operation is exceptionally efficient.
High per acre yields of crops are encouraged, even if obtained by relatively expensive methods.	High per acre yields of crops are discouraged, unless obtained by inexpensive methods.
Labor-saving methods are encouraged, but not at the expense of good yields per acre and per animal.	Labor-saving methods are encouraged, even if some loss in yields results.
Retailing by farmers is discouraged. More can be made by staying home and producing more units of product.	Retailing by farmers is greatly encouraged, because retail prices remain high relative to farm prices.

Long-Time Trends in Items Entering into Cost of Production

Of the many items for which a farmer pays out money, one of the most important is wages. During 1830–39, 45 pounds of wheat was sufficient to pay for one day of harvest labor in Tompkins County, New York.[3] In recent years, approximately 200 pounds of wheat have been required to hire a man for a day. Similar comparisons could be made in other regions and for other products. The long-time trend of both farm and city wages in the United States is upward.

This long-time upward trend of wages is merely an expression of the increased production per capita. Increased efficiency of production in both agriculture and industry has made possible this higher production per capita. Since the long-time trend is for more efficient use of labor, and therefore higher wages, the farmer who does not keep up to the average in increasing the efficiency with which his labor force is used will find himself at an increasing disadvantage. It is not enough to be as efficient as father was.

The need for a continuing increase in labor efficiency applies not only to hired labor, but to the labor of the farmer himself, and the members of his family. If the farmer and his family are to keep pace with the increasing standard of living of the country, they must increase their output per worker.

There are two ways of increasing the output per worker—(1) increasing the number of acres of crops and the number of livestock cared for per man, and (2) increasing the production per acre and per animal. In order to keep pace with the increase in the purchasing power of wages, continued improvement in both of these will usually be necessary.

Some of the ways of increasing the number of acres and the number of livestock cared for per man are: increased size of business, better distribution of labor requirements throughout the year, use of more machinery, improved farm layouts and building arrangements, better planning of the work, timeliness in work, and better management of labor. The length of the working day on farms will probably tend to decrease in the future, but not to the extremes of city industries.

High yields of crops and animals become more important as wages increase. Some land which could be operated at a profit when 45 pounds of wheat would hire a man for a day, is no longer

[3] JOURNAL OF FARM ECONOMICS, page 784.

profitable and must be taken out of crop production. On the better land, particularly in eastern United States, increased fertilization is desirable.

The long-time trend of the purchasing power of fertilizer has been downward. Areas with fertile soils which are heavy and difficult to work were once more valuable than less fertile areas with light, easily-worked soils. The trend in land values is for a decrease in the value of soils which require large amounts of expensive labor, but relatively little fertilizer and an increase in the value of soils which require less labor, but more fertilizer which is relatively cheap.

The long-time trend of taxes is upward and must continue so as long as more and more services are demanded from governmental agencies. Unlike wages, there is no way in which a farmer can reduce his expense for taxes by improving his farm organization.

Many other items entering into the cost of producing farm products have indicated long-time trends. Some of these trends, like those of wages and fertilizer, call for marked changes in farm organization. Others are more like the increase in taxes, in that no large changes in farm organization can be made as an adjustment.

Long-Time Trends in the Relative Value of Farm Products

Another type of long-time price trend which affects farm operations is the increase or decrease in the value of certain farm products relative to others.

In New York, the classic example of a product which has declined in purchasing power is hay. For the five years, 1893–97, the purchasing power of prices paid to New York farmers for hay averaged 117 (1910–14 = 100).[4] For the five years, 1931–35, the average was 63. For several sections of the state which formerly produced timothy hay for city horses, this decline in hay prices is the most serious occurrence since the land was settled. The farmers have a choice between (1) changing the type of farming or (2) continuing with hay farming until the sheriff sells them out. Contrasted to hay, the index number of the purchasing power of prices paid for poultry and eggs increased from 84 in 1893–97 to 91 in 1931–35. This explains why one area near the writer's home has made a decided shift from hay farming to poultry farming.

[4] Index numbers for hay and poultry and eggs are from Cornell Bulletin 643, "Prices of Farm Products in New York State" by S. E. Ronk.

Many other examples of farm products which have either increased or decreased in purchasing power could be listed. These trends in purchasing power of farm products usually take place slowly and irregularly. For this reason they are often overlooked for many years, and the resultant difficulties attributed to other happenings. This improper diagnosis usually leads to improper remedies, and further difficulties for the farmers involved.

Cycles in the Purchasing Power of Farm Products

Definitely established cycles in the purchasing power of farm products are limited to livestock, and are caused by the almost universal opinion that present prices of any particular product will continue indefinitely with only minor changes. As a result we have first too many hogs with low prices and then too few with high prices, and then repeat the process. The length and violence of the cycles for different livestock varies with the length of time required to get into and out of the business. Considering hens, hogs, sheep, cows, and horses, we find that the length of time to get into, or out of the business is in order as listed, and that consequently the length and violence of the cycles is in the same order.

Cycles in the purchasing power of livestock affect farm operations more than they should. A few farmers have successfully "played the cycles" by doing the opposite, but most of those who adjust their farming operations on the basis of these cycles go into enterprises when they should be liquidating, and liquidate when they should be going in.

The best rule for a farmer is to decide whether, over a long period of years, the type of livestock in question will be profitable and then to organize his business on this basis and not try to vary his operations to hit the high prices. As has been previously stated, radical changes in farm organization cannot be made quickly. Even though a farmer is successful in his efforts to have a large amount of stock to sell at the peak of the cycle and a very small amount at the bottom, he may lose more by upsetting his farm organization than he gains by selling his stock at the high prices.

Some persons have expressed the fear that with so much knowledge concerning cycles being disseminated among farmers, there was danger of reversing them. On the other hand, with the increasing commercialization of agriculture, there is a tendency for cycles to become more violent. To date, the knowledge concerning the

cycles has apparently not been enough to counteract this tendency, to say nothing of reversing the cycle or even decreasing the violence.

Summary and Conclusions

Since all of the types of price changes discussed here may occur at the same time, much confusion results. A change in the price of a particular farm product may be due to a change in the general price level, or it may be a trend in the price of the product relative to other products, or, in the case of some products, the position of the cycle of purchasing power may have changed. If the price change is due to the general price level, or is a cyclical change, farm operations should not be materially affected. On the other hand, a trend in the price of the product relative to the price of other products may call for a complete reorganization of the farm business in order to make the best of the opportunities offered.

A fall in fertilizer prices may be due to a falling general price level, or it may be a fall in fertilizer prices relative to other prices, or both factors may be operating together. If the fall in prices is due entirely to a drop in the general price level, fertilizers may be expected to maintain (over a period of years) their same price position relative to other commodities, and no change in farm organization should be made. If fertilizer prices are declining relative to the other costs entering into farm operations, changes in farm organization may be highly desirable.

At the present time, one of the outstanding needs of American agriculture is better informed extension workers and farm leaders to help farmers to properly identify the price trends to which they are subjected, so that they can make the proper decisions concerning the organization and operation of their businesses.

TECHNOLOGICAL DEVELOPMENTS AFFECTING FARM ORGANIZATION

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The continuous adoption of technological improvements in American agriculture during recent decades calls for something more than a factual statement of specific improvements in method and the resulting changes in organization and management of our farms. It seems to me that this highly dynamic process should be incorporated in our economic theory in a much more realistic fashion than has yet been the case.

Outstanding Technological Changes Since 1909

Before taking up the specific technological developments, we should consider for a moment a classification of these improvements. First, there are many technological improvements which do not involve any appreciable change in either the organization or the management of the farm. In this class we may place the improvements in varieties of crops, the substitution of more effective types of fertilizers and of improved spray materials. Improvements of this type are developed largely outside of the individual farm.

Second come the technological changes which modify the farm organization primarily and affect managerial practices only to a lesser degree. The outstanding change of this type is undoubtedly the shift from horses to mechanical power which has been of such great importance in recent years. Technological changes involving farm organization may be subclassified with regard to their effects on the proportion of labor, capital or land needed in the farm unit. Thus, there are some changes which save labor without requiring additional capital or managerial attention. Some save labor but require increased amounts of capital to take its place, while still others may make the land more productive either with or without added application of labor or of capital.

A third type of technological change includes those developments which affect the management practices primarily and change the organization of the farm only to a lesser degree. As illustrations of this type we may mention the changes in livestock sanitation

practices, changes in depth of plowing or cultivating, shifts from barn to shock threshing, and so on.

Mechanization in Agriculture

The most important influence on farm management and on agricultural employment since 1909 has undoubtedly been the adoption of mechanical power and the use of more and larger mechanical appliances.[1] The adoption of automobiles and trucks on farms was just beginning to get under way in 1909. By 1930 there were over 4 million autos and 900,000 trucks on farms, and the number of each has increased somewhat since then. The adoption of automobiles and trucks has had a profound influence, not only on the organization and management of the farm, but also on the life of the farmer. They have not only led to improved market contacts but have led to far more travel and a broader outlook by farm people and have brought within their reach educational, medical and recreational services that were practically unavailable before.

The adoption of farm tractors practically coincides with the period we are studying. In 1910 there were about 10,000 tractors on farms in the United States, while at the present time the number is not far from one and one-third million. The direct result of the adoption of mechanical power has naturally been the displacement of farm horses. In 1916 there were over 20 million work horses and mules on farms in the United States. In 1935 the number was only 14.8 million, and the acreage of crops handled per horse had risen from 16.6 in 1909–16 to 22.7. On the basis of the number of horses that would have been required to care for the crops of the country at the 1909–16 rate, the reduction in work horses amounted to about 5.6 million head.

It has been estimated that the shift to mechanical power has resulted in a saving of about 655 million man-hours per year in field operation, the care of the farm power units, and in raising colts for replacements. In addition, there have been released for other purposes amounts of feed which were estimated to take another 390 million hours to raise. This has made possible a considerable increase in the production of cattle, hogs and poultry.

[1] For a more detailed discussion see the report of the National Research Project on Changes in Farm Power and Equipment—Tractors, Trucks and Automobiles, and the report on Changes in Important Field Implements.

This says nothing about the saving in transportation caused by adoption of autos and trucks. It has been estimated that the 5 million farm motor vehicles are used about one billion hours per year, and that the same amount of travel and hauling would require about five times as many hours by means of horses; but, of course, if only horses were available, less travel and hauling would be performed. Neither should it be concluded that the estimates just given represent a net saving since labor is required in urban areas to produce the mechanical power units and their fuel, lubricants and tires, as well as to service them.

The trend towards the use of larger power units has been accompanied by the use of larger plows, discs, harrows, cultivators, and so on. There has also been an increase in the use of some heavy machines; such as the combined harvester-thresher, which were used only in limited areas before 1909. And finally, a few new implements have come into use, such as the mechanical corn picker, vertical disc plow, pickup hay baler, and field ensilage cutter.

The greatest effect of the process of mechanization may be observed in the Small Grain Area, where not only the method of performing farm operations has been profoundly changed but where, also, the basic type of agriculture has shifted in some sections from a grazing economy to the production of crops. In less spectacular fashion, the movement has influenced also the Corn Belt, and the Western Dairy Area, while effects have been smaller in the Eastern Dairy Area and the Cotton Belt.

Technological Changes in Crop Production

Discoveries by agronomists and horticulturists since 1909 have been many and varied, but, as with similar discoveries in other fields, it is difficult to tell to just how far farmers have adopted the indicated changes in their practices. Improvements in varieties of crops, discoveries regarding fertilization or soil amendment, improved methods of combating plant diseases and insect pests, and changes in cultural methods have all been of importance.[2] These have for the most part affected the current management of the farm rather than its organization.

Outstanding among the shifts in crop production were the spread

[2] For further discussion see: *N.R.P. reports A-1, A-4, A-5, A-7* and *A-10*, on changes in technology and labor requirements in crop production; sugar beets, potatoes, corn, cotton and small grains, respectively.

of wheat into areas that had previously been used primarily for range, and the development of varieties of corn that could be grown in cooler or drier climates. In the Small Grain Area the acreage of corn increased around 20 per cent and wheat around 75 per cent between 1909 and 1930, while in the Range Area, acreage of each of these crops increased fourfold.

On each important crop there have also been numerous changes in cultural practices. The objective of cultivation has changed so that now it is considered simply a means of controlling weeds in most areas rather than a means of conserving moisture. Harvesting methods have also changed as, for example, the great increase in corn acreage harvested for silage instead of grain in the northern and eastern states, and the snapping or stripping of cotton in the semi-arid cotton section.

Technological Changes in Livestock Production

In livestock production there have also been many important discoveries and developments. Improved selection of breeding animals has been of importance in raising the level of dairy production per cow, and in changing the general type of hogs raised, as well as in the improvement of poultry. Also beef cattle have been selected for earlier maturity and are now marketed several months younger than they were a quarter century ago.

Discoveries in animal nutrition are having far-reaching effects as the changes they suggest are gradually being incorporated into the farmer's practices. Discovery of vitamins and their functions, knowledge of the importance of minerals in livestock feeding, and better knowledge regarding the balancing of rations have all been of consequence.

Great progress has been made in the control of animal diseases and in improving the sanitary conditions under which livestock products are produced. The campaign to eradicate bovine tuberculosis is far advanced, but Bang's disease and chronic mastitis are demanding control or eradication. Thus, gains in some directions have been partly or wholly offset by disease losses among livestock or soil depletion and erosion in production of crops.

Development of Soil Conservation

In 1909 most farmers thought little of erosion control or soil conservation. Since then the use of terracing in the South has been

greatly increased, and more recently under the AAA programs and the Soil Conservation Service, farmers have been made far more conscious of the problem of soil maintenance. It is still too early to tell what the results of this campaign will be, although it is safe to anticipate some increase in labor per acre of crops grown on erosive land and a less intensive use of land whose fertility is becoming depleted.

Changes in Farm Organization as Related to Technological Improvements

With all the technological discoveries and changes in farm practice that have been mentioned, we might expect the organization and management of the American farm to be greatly changed since 1909. Instead, we find that the average farm has adopted these changes gradually and without much shift in its basic organization, even though there has been a pronounced revision in certain practices.

In relatively few cases is it possible to separate and measure the changes in farm organization that have been caused by technological influences from those caused by economic or social forces. Estimates of the individual effects are necessarily subject to considerable error. Still it is possible to establish a fairly clear connection between some of the major influences and changes in farm organization and management. From Census data we find that, in general, there has been an increase in the acreage of crops, a decline in the number of horses, and an increase in numbers of other livestock handled per worker. The average farm unit in 1929 contained about 13 per cent more crop acres, 10 per cent more livestock units, and utilized capital goods which at current prices were valued at about $1000 more than in 1909. After corrections are made for the change in price level, however, most of this apparent increase disappears. In terms of physical goods the capital in 1929 differed from that of 1909 chiefly in that it included mechanical sources of power as well as workstock.

In the labor element, the average farm unit contracted by an average of 8 per cent and thus the change in physical organization consisted of a contraction in labor and a small increase in capital. With improved methods of operation, it was possible for the average farm worker in the United States to handle 23 per cent more crop acreage and 18 per cent more animal units in 1929 than

in 1909. Because of the droughts and the AAA programs of the 1930's, there was a decline, at least temporarily, equal to about a third of the previous increase in crop acres per worker, but there was a further rise in the number of livestock units per worker.

The typical farm varies greatly among regions in the area of land, in the amount of capital used, and in the nature and relative size of the different enterprises. There is, however, one characteristic which remains very nearly uniform in different areas. That is the size of the labor force. The typical farm is a one-family farm, with a few months of extra help hired during busy seasons. This standard labor supply has declined with the size of the family, and averaged only 1.33 family workers per farm in 1935 as compared to 1.52 in 1909. The hired labor per farm remained practically unchanged from 1909 to 1929 at 0.46 to 0.48 workers per farm, and then declined during the depression to 0.38 per farm. The changes in proportions between labor, land and capital, however, differed greatly from area to area.

Changes in Makeup of the Average Farm of the Corn Area

In the Corn Area[3] the decrease in the number of workers per farm was just about average for the country, that is, 8 per cent. Practically all the decline, however, occurred in the hired labor. The value of capital goods used per farm increased 80 per cent when taken at current prices, or about one-fourth if corrections be made for the difference in price levels as between 1909 and 1929. The acreage of crops per farm increased 6 per cent, with an expansion in corn and small grain, but with decreases in the acreages of hay. The number of livestock units per farm rose one-sixth, with an increase of about one-quarter in the number of milk cows, and of over two-thirds in the pounds of hogs produced per farm. On the other hand, there was a decline in the number of cattle other than milk cows, as the cattle enterprise was shifted towards dairy rather than beef production. Taken individually, the changes in organization of the Corn Area farm since 1909 may not seem very great, but when added together the shift in organization was considerable.

There are wide differences in the trends of development between groups of farms or of farmers within any area. This may be illus-

[3] Including the states of Ohio, Indiana, Illinois and Iowa.

trated by some of the data collected in the National Research Project's field study. In order to obtain more homogeneous groups, only farms of between 140 and 259 acres were used in this particular analysis. These were divided into farms on which tractors had or had not been adopted by 1936. Each of these classes was further subdivided into three groups on the basis of age of the farmers. Each of the six resulting groups tended to exhibit a trend of its own, but in general, showed also the trends just mentioned for the Corn Area as a whole.

Some of the differences in farm organization seemed to be related primarily to the advancing age of the farmer. There was a tendency for the size of farms to increase both in crop acreages and also in number of livestock units; as the farmer became older the number of months of family labor increased, and months of labor hired declined slightly.

The younger farmers reported two or three months less of family labor than the older ones had when they were of corresponding age. A larger percentage of the younger men had tractors, and both in the tractor and the non-tractor groups the younger men handled more acres of crops per man and per horse. But there was no consistent difference in the number of livestock units per man. Indications are that many of the older farmers, even when they obtained tractors, had never made full use of them, partly no doubt because their tractors were often of older models.

Thus, relatively stable overall averages may hide pronounced changes by some groups, while there is relatively little change by other groups in the same areas. These data suggest, also, that we should watch the shifts by the younger men in order to obtain an idea of what the typical farm organization or method is to be a few decades in the future.

Changes in Other Areas

In the Small Grain Area[4] there was a great increase in crop acreage, both per farm and in total. While corn acreage per farm rose from an average of 36 acres in 1909 to 45 in 1929, small grain increased from 64 to 103. Among livestock in the Small Grain Area there was an increase from 3.5 to 5.2 cows milked, a small decline in other cattle, an increase of over a half in poultry, and a doubling

[4] Including Montana, North Dakota, South Dakota, Nebraska and Kansas.

in hog production. The number of workers per farm changed but little here, but the valuation of capital goods increased nearly 70 per cent in current dollars and about 20 per cent when expressed in dollars of equal buying power.

In the Western Dairy Area[5] there was an increase of 10 per cent in the total crop acreage per farm between 1909 and 1929, but in the Eastern Dairy Area the change was relatively small. The acreage of hay per farm increased and small grain declined in each area, and in the Western Area there was also an expansion in corn. Changes since 1909 in livestock enterprises are more pronounced than in crops. The number of horses per farm declined in both areas and this released feed, labor and stable room for more milk cows, which increased about 15 per cent per farm in the Eastern and 45 per cent in the Western Dairy Area. There was also a large increase in the number of chickens and a decrease in the average number of sheep, but a pronounced difference in trend in the number of hogs raised per farm. In the Eastern Dairy Area hog production declined about a fifth, but in the Western Area rose over 70 per cent along with the greater production of feed crops.

The amount of labor employed per farm declined by a small percentage in the dairy areas, most of the decrease occurring in the family labor group. In the Western Dairy Area, however, hired labor increased by about one month per farm between 1909 and 1929. The valuation of capital goods doubled when expressed in current dollars, and rose a half in terms of constant dollars. This accompanied the increase in dairy cattle which require relatively large investments both in livestock and in buildings and equipment.

In the South the typical family farm is smaller than in any of the areas we have discussed, since the South grows more crops which are relatively intensive in terms of labor, such as cotton or tobacco. Livestock are of little importance. The average number of workers per farm is relatively higher in the South than in the North, and the difference is in the larger family labor force. From 1909 to 1929, however, there was a decline of 9 to 15 per cent in the average number of all workers per farm in the cotton areas. Most of this decline occurred in the family labor group. The

[5] The Western Dairy Area consists of Michigan, Wisconsin and Minnesota, while the Eastern Dairy Area consists of Pennsylvania, New York, Vermont, New Hampshire, Massachusetts and Connecticut.

changes in capital goods per farm were smaller in the South than in the other regions.

Adoption of Technological Improvements— Some General Principles

In classroom discussions and in economic journals we commonly find the entrepreneur's technological problems dismissed with the phrase "under a given technology," or "technology remaining unchanged." The theoretical economist then proceeds to discuss production in terms of the four primary factors: land, labor, capital and entrepreneurship. The whole body of theory of production economics has been built up on this simple framework. Production occurs when the entrepreneur brings together the land, labor and capital over which he has obtained control. The success of the venture depends on the proportions in which he combines these factors and on the energy and judgment with which he directs the establishment from day to day after it has been set up.

It is true that the guiding principle of economic activity is to so use our economic resources as to obtain the maximum gain or benefit from them. But it is equally true that the net production varies enormously with the method by which the resources are used. It is not enough that the factors be combined in the proper proportions, they must also be used by the method most suitable to the purpose at hand. Indeed, capital goods are designed to conform to the technological pattern in which they are to be used. Land is laid out in fields which will best accommodate the most economic system of farming, which in turn depends on the available methodology. Furthermore, different types of land change in their relative productivity with development of technology. Fifty years ago, when implements and power units were small, large level fields had but little advantage over small, hilly ones. Now, with the development of power farming, the hills of New England and the small fields of the Old South have decreased in relative productivity as compared to the large level fields of the Middle West and the Great Plains. Even labor cannot be regarded simply as muscular effort spent during a time period, but rather as the human attention needed, perhaps to facilitate the growth of plants, or to prevent disease losses among livestock. Some of these procedures to which we apply the designation of "labor" must be carried out within a very rigid pattern if they are to be successful. Others may

deviate from the pattern within a relatively wide range. The point is that, when laborers are trained primarily for the performance of highly specialized procedures which change with methodology, and when capital goods are designed primarily to facilitate these procedures, it is far from adequate to dismiss technique with the phrase "under a given technology."

In fact, we cannot say that there is a single or given technology even at a certain point of time. There are many methods by which most products can be procured. In the 1936 field study of the National Research Project, we found men who were harvesting small grain with combines. We found others harvesting small patches of grain with cradles. We found four-row tractor cultivators, and also cultivators drawn by a single mule and making two or three trips across the field to cultivate a row. Although the larger outfits were undoubtedly the more economical in most cases where they were being used, it is equally certain that they would not have been preferable in a majority of the cases where the cradle or the one-mule cultivator were found.

The farmer's technological problem is not solved simply by the adoption of the most advanced technology. From among the many possible and existing techniques he must select simultaneously the most economical technology as well as the specialized factors of production which will operate most economically under the technology chosen. This determines the knowledge and training needed by the farm management specialist as well as by the farmer. To choose successfully, they must both be familiar with the available technologies, with the capabilities of the specific production factors, with the principles of production economics, and with the existing or prospective price situation. Lack of knowledge in any one of these respects may result in failure of the venture, and an erroneous choice of technology may be quite as serious as erroneous choice or combination of the economic factors.

Tendency to Adopt Improved Methods

Farmers, as well as other business men, tend to adopt new methods when and if they promise a higher net return from the operation of their plants. The higher return may come either from a lower cost of operation, or from a product of greater value. Adoption of large mechanical outfits for preparing the seedbed afford an example of the first type, while improved methods of

spraying fruit illustrate changes which yield more perfect and valuable products.

Newly adopted methods are not necessarily newly invented ones. As the economic situation changes the relative advantages of different technologies change also, since they employ various proportions of high- or low-priced materials, equipment or grades of labor.

The process of adoption of a technological improvement may be a protracted one, attended by much economic friction and many errors in choice by individuals. The direct results are likely to be larger volumes or production at lower costs per unit. Profits are likely to be higher for a time to the producers who adopt the improved methods, at least where adoption occurs soon after the new methods become both practically useful and economic. A corollary is that profits to the producers who fail to adopt them are likely to be lower because of competition with a larger volume of lower priced product. A second corollary is that, where the product is sold competitively, profit may be expected to return to its normal level after the improved method has been generalized and incorporated in the practice of the whole industry. A third corollary is that the new method may make old equipment obsolete and may displace more or less labor, depending on the nature of the new method. The distress and the social upheavals which may result from widespread adoption of labor-saving methods are well-known and are beyond the scope of this paper.

The general pattern of adoption of technological improvement corresponds to the well-known growth curve. The rate of adoption depends largely on the nature of the new method, particularly its economic advantage and the ease with which it can be incorporated into the farmer's existing practices. Thus, the adoption of hybrid seed corn has been very rapid, since it required but little change in farm practice; merely the annual purchase of seed instead of its selection on the farm. On the other hand, improved methods of hog and poultry sanitation have been adopted slowly, since they require careful attention and the faithful following of a given procedure.

However, adoption of technological improvements does not occur uniformly either over the entire country or on all farms in any given area. First, the adoption of a new method requires the overcoming of resistance or at least inertia on the part of the farmer. Some farmers are quick to see an opportunity to improve their

methods and may even be overly anxious to make a change. Others cling tenaciously to the ways which they or their fathers have followed for many years. In between these extremes there are all degrees of responsiveness to new opportunities.

One interesting observation from material collected by the National Research Project is that the newer methods are adopted at a significantly greater rate by the younger farmers, while the older ones are less likely to change.

I hardly need to say that another cause for uneven adoption of new methods rests with the variation in the natural and in the economic environment. Thus, we find large power equipment adopted most rapidly in areas with level or gently rolling topography and with large crop acreages per farm. Improvements in methods of dairying occur most rapidly in the regions where the dairy is a major enterprise. The adoption of hybrid seed corn occurs most rapidly where the most corn is grown, and so on. The farmer's margin of indifference to new methods or new machines varies with economic conditions and with modifications in the machine or the method. Witness, for instance, the present adoption of the small tractor in the South, and of the small combine in the Middle West.

With the wide variation in rate of adoption of a given technological improvement, not only between areas but even between farmers in the same area, any generalizations regarding the effects of technological changes on farm organization and management must be understood to be of limited applicability. The economic universe is one of great diversity and historical trends in it are the net statistical effects of changes in the several segments of the universe and not simultaneous and universal movements.

Conclusion

From the preceding discussion we have seen that there have been many technological changes and improvements in American agriculture during the past quarter century. The effects of these on the organization and management of the farm have been quite different in different sections of the country, depending on the types of crops or livestock produced. They have varied in their incidence, also, between different types of farms and different groups of farmers. But the technological changes have gradually been incorporated into the farmer's practice. And, since agriculture is

perhaps the most competitive of our major industries, and since there has been opportunity for agricultural expansion throughout this period, it is safe to say that the greater part of the benefits from improvements in farm technology have been passed on to the consumer in the form of larger supplies of farm products and relatively lower prices.

The question may properly be raised whether the farmers themselves have received any benefit from the improvements. The evidence from farm records kept in various states leaves little doubt that there has been such a profit to the farmers who can or do adopt improved practices. At the same time, it may be inferred that the non-progressive farmers and those in such positions that they could not apply these improvements are probably worse off than if the technological discoveries had not occurred.

The principle was stated earlier that the farmers who adopt an improved practice soon after its discovery tend to profit above their neighbors until the new method has come into general use. A qualification which will occur to farm management men is that it is possible to adopt a new practice too early as well as too late. In other words, there is a strategic time for adoption—after the improved method has become not only technically but also economically feasible, but before adoption has occurred by the great mass of farmers. After that, the others must adopt it in self defense but it brings no unusual profit.

The point was made early in this paper that for maximum returns the farmer must select, not only the proper combination of the factors of production, but also the optimum combination of techniques, and that the optimum combination of factors depends on the processes or techniques by which they are to be used. The farmers of any specific area, therefore, stand to profit from wide dissemination of knowledge regarding the most modern and economic technology. The farm management worker has a heavy responsibility in interpreting to the farmers the relative economic advantages of the various available techniques and in making this information available at the optimum time.

PUBLIC ASSISTANCE TO LOW-INCOME FARMERS IN THE NORTH

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An attempt will be made in this paper to discuss public assistance to low-income farmers in the Corn Belt. The States of Illinois, Indiana, Iowa, Missouri, and Ohio will be those considered as making up the Corn Belt, although it is recognized that the Appalachian-Ozark area extends into a substantial portion of four of of these five states, and further that portions of other states might be included.

The Corn Belt is a section of the country which has been thought of by some people as one in which are found quite generally prosperous families living on fertile farms, and one in which there would be little if any need for public assistance to farmers. However, there are thousands of low-income farmers in the Corn Belt and probably one-third of all farm families in these five states, or a little more than one-third of a million families are in need of some type of public assistance in addition to the traditional forms to which we have become accustomed, such as public schools, roads, agricultural extension work, et cetera, in which farmers who pay less than the average amount of taxes are receiving benefits made possible through the more than average tax payments made by their more prosperous rural neighbors, or by urban individuals or corporations in their own or other states.

Need for Public Assistance

The writer defines a low-income farmer as one whose income is too low to enable him and his family to enjoy a decent American standard of living and to have a reasonable degree of security for the future. Approximately one-half of the farms of the United States in 1929, before the depression, produced gross farm incomes of less than $1,000 (value of products sold, traded, or used by operator's family) according to analyses of the 1930 census made by O. E. Baker, C. C. Taylor, and others.[1] Unpublished data compiled by Conrad Taeuber of the BAE, indicate that for these farms in the category with gross farm income under $1,000, the average value of all products was $615, of which $200 was consumed at home, leaving $415 as average gross cash income. To this income

[1] Baker, O. E., A Graphic Summary of the Number, Size, and Type of Farm, and Value of Products, *Misc. Publ. No. 266, U.S.D.A.*, (Oct. 1937). Taylor, Carl C., Helen W. Wheeler, and E. L. Kirkpatrick, Disadvantaged Classes in American Agriculture, *Social Research Report, VIII, U.S.D.A.*, April, 1938.

must be added the value of shelter provided by a not too comfortable dwelling and any earnings from off the farm. Not more than one-half of these farm operators, however, reported any work off the farm, and most of those who reported such work had only a very small amount as not more than 10 per cent had as much as 150 days work off the farm. Out of this $415 average gross cash farm income, farm operating expenses such as rent, interest, mortgage payments, feed, fertilizer, machinery, workstock, taxes, et cetera, must be met. The remainder is available for the purchase of food, clothing, household furnishings, medical care and hospitalization, education of the children, radios, et cetera, in fact to support an "American standard of living" and also provide security for the future.

Asch and Mangus said in a WPA Research Monograph[2] published in 1937 that "Some 2,000,000 farm families received relief at one time or another during the depression period." But in 1929, even before the depression, it seems to me that at least a large portion of the farmers making up the "lower half" described above, if not all of them, were in need of some form of public assistance. Laying aside any humanitarianism that we may have, from the viewpoint of purchasing power alone, it would seem that such a group in our population is a great handicap upon our national life.

Let us examine the figures for those farm families who received in 1929 gross farm incomes less than $600. These families constituted 28 per cent of the total farm families in the nation. Taeuber's data show that for this group of farms the average value of all farm products was $375, of which approximately $180 represented products consumed at home leaving $195 as gross cash income. After paying farm operating expenses these families must have experienced considerable difficulty in stretching what remained of the $195 to cover cash family living costs in 1929 not to mention the predicament in which they found themselves during the depression years following. The figures given above indicate that the problems of low-income farmers today are not alone depression problems, but perhaps even more deep-seated problems which the depression has revealed in a new light.

The need for public assistance on the part of farmers in the Corn Belt is not as large relatively as in the nation as a whole, although the condition of a goodly portion of these farmers is far from being enviable. A little over one-third of the Corn Belt farmers received gross farm incomes under $1,000 in 1929 as compared to approximately one-half for the nation as a whole, and that

[2] Asch, Berta and A. R. Mangus, Farmers on Relief and Rehabilitation, *Research Monograph VIII, Works Progress Administration,* 1937.

while 28 per cent of the farms in the United States produced gross farm incomes below $600, only 19 per cent of the Corn Belt farmers received gross farm incomes below this amount. The percentage of farms producing gross farm incomes below $1,000 varied from 49 per cent in Missouri to only 15 per cent in Iowa.

The Census of the Unemployed[3] taken in 1937 shows that there were 97,056 registrants in the five Corn Belt States who reported farm residence and classified themselves as totally unemployed. In addition 37,688 reported that they had emergency employment and still another 83,751 that they were only partly employed. Of the total registrants in these same states those who reported themselves as totally unemployed included 72,728 who gave their occupations as either farm operators (owners and tenants) or farm laborers. It appears that in considering need for public assistance among low-income farmers, there is not only a problem of aiding needy farmers who have land to cultivate, but also one of assisting farmers who have no land and are unemployed. This Census also shows that there is a considerably higher incidence of unemployment in the age groups under 25 than in other age groups among farm workers. This indicates that many young people on farms have access neither to work on farms nor jobs in the cities.

The writer through his experience with the Farm Security Administration, has had occasion to meet quite a number of low-income farm families in the Corn Belt on their farms and in their homes. Poor soil, poor farming methods, family difficulties, large families, insecurity of tenure and frequent moves, drought, flood, hail, inadequate size of farms, sickness, lack of medical, surgical and dental care, depression, discouragement, bank failures, farm foreclosures, lack of usual sources of outside income, unwise purchases, failure to raise food for family use and feed for livestock, lack of credit with which to finance the production of a crop, three and one-half per cent per month interest rates, poor quality and insufficient amount of livestock, worn out machinery, poor diets, soil erosion, failure to keep abreast with information concerning improvements in farming methods, poor housing, non-participation in normal community life, and many other factors in various combinations seem to be responsible for the plight of these families and for their need of public assistance.

Programs of Public Assistance

The Social Security Board presents data from time to time which indicate the amount of relief granted in sample rural and town

[3] Biggers *Census of the Unemployed*, Final Report on Total and Partial Unemployment, 1937.

areas by states. Unfortunately these data are not broken down to show the amount of relief going to farm population. They do show, however, the trend in rural and town areas away from general relief and toward special types of public relief, such as old-age assistance, aid to dependent children, and aid to the blind, during the past two years. This holds true for the Corn Belt as well as for the rest of the country. The making of Rehabilitation loans by the Farm Security Administration has also made for a constant trend away from direct relief in the open country.

The Social Security Board's Bulletin for February 1938 shows that in May 1937 there were 234 recipients of old-age assistance among each 1,000 persons aged 65 or over in rural areas, but only 185 recipients per 1,000 of the same age in cities. The average payment per person in cities, however, was $22.85 as compared with $16.05 in rural areas. In urban areas payments amounted to $4.22 per capita for the entire aged population while in rural areas the amount was only $3.75 per capita.

The *Works Progress Administration* is making jobs available to some Corn Belt farmers in limited areas, although this agency has been withdrawing from the employment of farmers during the past three years with the exception of displaced farmers living in villages, as the Rehabilitation program of the FSA has built up its case load. Figures were not secured showing the exact number of Corn Belt farmers now on WPA rolls.

Agricultural Adjustment Administration benefit payments which go to prosperous farmers as well as to those with low incomes, are usually not considered a form of public assistance in a relief sense. However, since they may have enabled some farmers to keep off of relief rolls, they are included. Payments from May 12, 1933 to June 30, 1938, in the Corn Belt States totaled $447,829,000 or an average of $430 for each farm family in the area. The figures by states in round numbers were Illinois 96 million, Indiana 60 million, Iowa 160 million, Missouri 82 million, and Ohio 50 million. In addition to receiving benefit payments farmers cooperating in the AAA program in the Corn Belt have participated in the benefits from the Commodity Credit Corporation loans on corn. As of June 30, 1938, total disbursements to corn producers, most of whom lived in the five Corn Belt States amounted to $141,578,830.

The *Farm Credit Administration* agencies, with the exception of the Emergency Crop and Feed Loan Department, usually are not thought of as rendering public assistance to low-income farmers. However, since Land Bank and Land Bank Commissioner Loans are said to have prevented the foreclosure of thousands of farms whose owners might have been thrown on relief without such loans,

and since the Federal Government in various ways assisted very materially in making this possible, they are included here even though it is not known to what extent their program has benefited low-income farmers.

On June 30, 1938, there were outstanding in the five Corn Belt States 82,268 Land Bank Commissioner Loans, averaging about $2,000 and amounting in the aggregate to $168,474,394. The Federal Land Banks made 67,697 loans to farmers in the five Corn Belt States during the three years 1933, 1934, and 1935. During 1934 almost three times as many loans were made in these states in each month as were made in the entire year of 1932. Only a few emergency crop and feed loans have been made in the Corn Belt during recent years with the exception of those made in Missouri and Iowa as a result of the drought in 1934. In other years, Missouri farmers have received more of these loans than have farmers in the other states.

The *National Youth Administration* and the *Civilian Conservation Corps* programs have been of considerable assistance to low-income farmers in the Corn Belt, although the writer did not obtain data broken down to show to what extent open country population benefited.

The *Farm Security Administration* is the principal agency carrying a responsibility for public assistance to low-income farmers. This Administration, one of the agencies of the Department of Agriculture, helps farm families on or near relief to help themselves to become self-supporting. It makes credit available to the farmer who cannot obtain credit through customary channels and assists him and his family in following farm and home management practices which will make for the best use of the credit as a stepping stone to self-dependence. Use of credit, sound farm and home management guidance, attention to health and medical care, improvement of tenure relationships, adjustment of debts, cooperative purchase and use of purebred sires and farm machinery, and efforts to encourage people to regain the confidence in themselves to strive to improve their condition, are involved in the FSA program. The general objectives of the program are to raise the standard of living of disadvantaged farm families and to assist them in attaining a greater degree of security for the future.

About 99 per cent of the families with whom the FSA works in the Corn Belt are assisted through the Rehabilitation phase of the program. Rehabilitation loans totaling $32,533,038 have been made to 127,771 disadvantaged farm families in the Corn Belt States. An additional 59,731 families received grants for subsistence at one time or another during the past four years, although less than

1,000 families received grants during the fall months just past. Of the 127,771 loans, about 45,000 were "standard loans" providing for complete rehabilitation, while the remainder were "emergency loans" made because of catastrophies such as drought, flood, and hail. The loans made in the Corn Belt by states up until August 31, 1938, were as follows:

State	*Number*	*Amount*[4]
Illinois	28,134	$ 5,303,539
Indiana	9,222	4,144,047
Iowa	13,088	5,894,269
Missouri	55,767	11,443,269
Ohio	21,560	5,747,914
Total	127,771	$32,533,038

The job of the county rural rehabilitation supervisor and of the county home management supervisor, after determining eligibility, that is, assuring themselves that the family is a farm family and can obtain credit from no other source, either public or private, is to help the family analyze its present condition and needs, and then to assist the family in working out a careful plan for farm and home operations. They work with the family as a unit, rather than with the farmer and his wife separately, as they have found that the problems of the business and of the home are usually inseparable. The amount of the loan is arrived at by totaling up the requirements for putting into practice approved farm and home practices included in the farm and home plan.

Often it is necessary for county supervisors and county committees to assist applicants for rehabilitation in adjusting their debts within their ability to pay before anything further can be done toward working out a plan of rehabilitation. Over 14,000 debt burdened farmers in the five Corn Belt States have been assisted in working out amicable adjustments with their creditors. Debts totaling $58,776,928 have been adjusted downward by $13,519,062 to 77 per cent of their former size. The number of debt cases adjusted varies from a little more than 2,000 in Indiana to almost 4,000 in Iowa. Farmers who were benefited in this way paid $448,960 in back taxes to local governmental units. Thousands of FSA client families required the help of county supervisors in working out equitable leasing arrangements with their landlords before they could begin the rehabilitation process. Many other families have had to give attention to remedying ill health before they were able to make much progress toward rehabilitation.

[4] Includes about $6,000,000 lent by State Rural Rehabilitation Corporations.

County supervisors report that some farmers who had been considered by their neighbors to be shiftless had merely been ill. The FSA is engaged in expanding the county medical care plans which have been worked out in cooperation with State and County Medical Societies. Such provision for medical care promises to be of value in the rehabilitation process. A method that has proved to be quite effective in rehabilitation is that of requiring, as one of the terms of the loan, that families plant good-sized gardens not only for summer use, but to supply vegetables to be canned for the winter, and to raise meat, milk, and eggs for home consumption. This not only enables a reduction in cash outlays for food, but also provides adequate vegetables and fruits in the winter diet which results in better health. Cooperative loans to small groups of farmers for the purchase of farm machinery, purebred sires and other items where individual ownership would have been both too costly and unnecessary has been an interesting development in the Rehabilitation program. More than 1,400 such cooperative loans, benefiting over 10,000 low-income farm families, have been made in the Corn Belt.

About $32,000,000 have been lent in the Corn Belt States in the Rehabilitation phase of the FSA program. Since most of the loans carry a repayment program covering five years, the greater portion of this amount has not yet matured. The sum of $8,000,000 has already been repaid. This amounts to about two-thirds of the amount matured. A majority of clients are current in meeting their payments and most of those who are delinquent are making some payments. From the standpoint of cost to the Government results are indeed encouraging, as compared to what the cost of a direct relief program would have been for the same families. But one should not think of results in terms of dollars only, since the human values involved in regaining self-dependence and self-respect are of such great importance. Some other indications of progress made by rehabilitation families, based upon reports on 31,584 of the standard clients in the Corn Belt, showing change from the time of their entering the program until December 31, 1937, are as follows:

7,099 families without milk cows, 9,355 without hogs, and 4,377 without poultry, acquired such livestock.

Net worth increased on the average about $250 per family from $633.90 to $886.59.

Average quantity of fruits and vegetables canned for each member of the family increased from 34 to 67 quarts.

The wholesale value of products produced and consumed at home increased from an average of $91 to $223 per family.

13,721 children increased school attendance.

Approximately 25,000 families began keeping farm and household accounts as a guide to future planning.

Under the provisions of Title I of the Bankhead-Jones Farm Tenant Act, 182 farm tenant families in the Corn Belt received loans averaging approximately $7,500 for the purchase of farms during the last fiscal year. Between 400 and 500 such loans will be made during the current fiscal year. The loans carry three per cent interest and are amortized over a maximum period of 40 years. However, to overcome difficulty in poor crop years and to provide greater security for the family the plan provides for establishment of a variable annual payment system at the option of the borrower, under which repayments will vary from year to year in proportion to net cash income.

Under the Resettlement phase of the program, the FSA has developed eight projects for 638 farm families by purchasing the land and making the improvements. The farms are leased to eligible farm families most of whom eventually will be enabled to purchase the farms under liberal terms. One of these projects has proved to be of special interest because without the application of any selective process, all of the share-croppers living on a tract of nearly 7,000 acres were allowed to participate in the project and no families were moved either out of or into the project area. By making loans to these 100 share-croppers for the purchase of workstock and machinery, the FSA assisted them in becoming tenants. Now, almost a year after the start of the project, there are indications that at least 98 if not all 100 will meet in full all obligations to the Government maturing this year. While most of the land on the Resettlement projects has been subdivided into conventional individual family farms, three cooperative farms, one for 8, one for 20, and one for 40 families, which were developed as a part of the projects, are being watched closely by many interested observers.

General Observations on Public Assistance to Low-Income Farmers in the Corn Belt

Rural poverty does not appear to be a depression problem alone. Cures rather than palliatives are needed. A program which will give the low-income farmer the maximum benefits at the least public cost is most desirable. The program of the FSA rather than one of direct relief seems to meet most nearly these specifications, recognizing of course that many measures which will improve the general agricultural situation will be of some benefit to low-income farmers.

Insecurity of tenure appears to be a large contributing factor to farm families being in need of public assistance. It is hoped that the efforts of the FSA, Colleges of Agriculture, and others in their

attempts to bring about the use of more equitable leases may meet with success. The Tenant Purchase program of the FSA is proving to be an interesting experiment with a method of increasing farm ownership.

Many farmers and their wives who apparently have not been very capable managers in the past are able to benefit from the help given them by FSA workers in planning their farm and home operations. They are receiving some benefit from the educational program carried on by FSA field personnel. The fact that 25,000 of these families in the Corn Belt have begun keeping some form of records is significant. The conclusion of FSA officials after a few years experience that they make more rapid gains when working with the family as a unit than when working with the farmer and his wife as separate units is of interest. Lack of opportunity or factors beyond the control of the families themselves are no doubt responsible for many families being in need of public assistance. The fact that the remedying of ill health in many cases has made farmers appear ambitious instead of shiftless lends support to this view.

The fact that a large majority of low-income families who borrow from the Government actually are repaying their loans, even though before receiving them, they had been adjudged as having no basis for credit by all other credit agencies, both public and private, raises some questions in the field of rural credit.

The experiment in cooperative production on three cooperative farms on Resettlement projects in the Corn Belt, which were evolved in an effort to discover new methods of assisting low-income families, may produce results worthy of further testing.

There appears to be a scarcity of information available concerning farm management practices which may be suitable for the use of relatively less skilled farmers on smaller farms. Farm management research studies in the past seem to have had to do in the main with discovering practices applicable to farms in the hands of the more highly skilled operators with larger capital resources. The attention being given recently by some rural economists to the problem of how less skilled operators may succeed on smaller farms seems to be a step in a desirable direction. In the opinion of the writer a broader point of view than that of considering the welfare of a single farmer is needed in approaching farm management problems. By considering the total amount of good farm land available and the total number of families who are in need of land, the welfare of all of the farm population perhaps can be better served. Unless there is a place in industry or some other place for many farmers now operating farms, it seems that with the increase in mechanization of agriculture there is danger of a reversion to

some type of semi-feudalism unless special efforts are made to preserve the ideal of ownership of family size farms. While from the standpoint of efficiency of farm management in terms of the labor income of the operator a large farm owned and operated by a semi-feudal baron with the help of three or four laborers might be desirable, it would seem that perhaps from a broader viewpoint some sacrifice might be made in this type of efficiency in order to prevent two or three present family size farm operators from being reduced to the status of landless laborers. Success in the cooperative ownership of certain farm implements by small groups of three or four farmers in the Rehabilitation program of the FSA suggests the possibility of wider use of this practice in gaining some of the benefits of larger scale operations by owners of family size farms, without reducing as many owners to the status of laborers as might be involved in case one of several farmers bought the farms of his neighbors.

Would it not be possible in considering farm management problems to give some thought to the possibility of a relationship between land and labor that would give special consideration to people? In other words, instead of starting with 500 acres of land and determining that perhaps the most efficient management would call for the labor of two or three or possibly two and one-half or three and three-fourths men could we start with a given number of men, say five, for example, and see if some scheme of management could be worked out through which all five could make a reasonable living from the 500 acres. The writer is concerned about the welfare of the one and one-quarter or two and one-half men remaining. Perhaps all five could not enjoy as high a standard of living as could the two or three, but the remaining families might at least be much better off than if they were without any land and possibly receiving relief. Perhaps the ingenuity of farm management people in working out management suggestions for the less highly skilled people already on family size farms may at least enable these people to hold their farms and prevent their more highly skilled neighbors from adding them to their own fields.

It might be possible that an approach to farm management other than that of giving primary consideration to a farm or a single family, that is in considering that there are we will say 100 families needing land and only a given amount of land, would make for fewer families in need of public assistance. A portion of the 100 might not be able to accumulate as much material wealth in a lifetime as they might if the remainder received no consideration, but more of the remaining portion might be able to gain security and stay off of relief rolls. To preserve democracy it seems that we must be concerned about the welfare of all of the 100 families.

PUBLIC ASSISTANCE TO LOW-INCOME FARMERS OF THE SOUTH

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The South is largely a land of farmers, so it is obvious that what has been designated as the "Nation's No. 1 Economic Problem" is largely a farm problem, or perhaps it would be more accurate to say, a problem of farm people. One-half of the nation's farmers live in the South; yet that section receives only one-fifth of the nation's income. The average return to farm families is only about one-third of that for the country as a whole. The opportunities for a living on southern farms are greater than in other sections; but many of the necessities and conveniences of present day living require cash, and cash is scarce. Fifty-three per cent of southern farms are operated by tenants, many of whom are sharecroppers or half-hands, possessing nothing that contributes to the making of a crop except their labor. In the three states of the Central South, which consist mostly of fertile Mississippi River Delta soil, there are 253,000 such sharecroppers, living with their usually large families in houses scantily furnished, with no possessions with which to earn a living except their hands, and those of their wives, sons, and daughters. The land, the livestock, and the farm tools are furnished by the landlord. The tenants move frequently; more than a third of the families changing farms each year.

It is obvious that this group has been unable to make any contribution to the general welfare, and any such contribution on the part of the landlords was made with only slightly less difficulty. The system of production credit from private sources which until a few years ago prevailed in southern farm financing was hazardous and costly. The interest rate on such private credit was high, ranging from 18 to 35 per cent and at times even higher, to the detriment of both tenant and landlord. With such a drain on income, the landlord has had a desperate struggle to obtain enough cash for mortgage payments, and for the purchase of high-priced manufactured articles.

The season of 1920, when agricultural prices tumbled rapidly between planting and marketing, brought on a crisis which shattered all hazardous and speculative enterprises depending on agricultural returns. Agricultural production loans from private banks in the South are now very few. There seems to be little prospect of these banking institutions again entering that field, but even if they should do so, low-income farmers with only a growing crop

and good character as collateral would have, as in the past, little opportunity to obtain such credit.

A continuation and further development of public aid for agricultural purposes seems essential. Public aid is not a new thing, although agriculture, in spite of its importance to the nation, has not been too generously supported with public funds when compared to other activities in which men engage. There have been forms of public aid for conserving physical resources such as forests, wild life, and soils; and attempts to prevent crop and livestock losses from disease and insect damage have been subsidized, but for expenditures for these things are not yet large enough to give the most effective results to the nation. An increase in these efforts is essential for the full preservation of our natural resources.

But such aids in conserving physical resources have helped farming more than farmers. Those who have no stake in the soil, no live stock, and little other property are not in position to take effective advantage of improvements in physical resources. The number of farmers who move each year, or who have their rent increased because of the application of soil improvement practices is still too great in the South for any great measure of progress to be brought to them through physical aids to agriculture.

Consideration of present and future aid from public funds to directly foster the preservation and usefulness of human resources seems imperative if people are to continue to press hard on the land where land resources are beginning to be scarce. Adversity has forced a consideration of such aids to farm people. Losses and fears of losses from the boll weevil brought to the attention of southern farmers and later to the nation the great educational work of the Agricultural Extension Service. A nation wide drouth caused an extension of the provisions of federal feed and seed loans to aid low-income farmers of the South to obtain the bare essentials of getting a crop started. The sheer necessity of the great depression brought the development of the programs of rehabilitation, resettlement, tenant purchase, farm debt adjustment, and community and cooperative services, accompanied by practical farm and home planning and guidance for low-income farm families in carrying out these plans.

The Agricultural Extension Service has effectively served farmers for more than a quarter of a century. It has done effective work in reaching all groups of farmers, but since its work is educational, it can only extend its aids to those who have the impelling desire backed up by means to avail themselves of such aids. While its advantages were available to low-income farmers and while Extension workers generally have been earnestly and conscien-

tiously interested in serving such farmers, there has been a press on their time from farmers of larger income who were anxiously striving to improve their status and had the means to do the things that trained Extension workers advocated. It is only natural, therefore, that the efforts of Extension workers did not reach far to the farm people who were "ill fed, ill clothed, and ill housed." The demand from others was too great, their needs were evident, and demonstrations and results were more effective with this group. The Extension Service is effectively correlating its activities with those who have been given responsibility for funds for loans to low-income farmers and supplementing to a great degree the effectiveness of use of these funds in advancing agricultural production and family living.

Federal feed and seed loans were first made available to southern farmers in 1931. There was an urgent need for emergency loans to make a start toward agricultural production recovery following the severe drouth of the previous year. These loans have been continued since, first, under the direction of the Department of Agriculture, and later, by the FCA. Such loans have been restricted to funds for the purchase of feed, seed and fertilizer. Loans have not been available from this source for obtaining or replacing work stock and farm implements or for family subsistence. These loans have met emergency needs for large numbers of low-income farmers, but limitations on the loans and the lack of guidance to go with them have restricted their usefulness in overcoming a chronic condition of need.

Out of the effort to start farmers who were on relief toward independent operation and living, has grown the Rural Rehabilitation program which has incorporated in its activities the missing ingredients which prevented other programs from rendering effective aid to many low-income farmers. This program, now administered by the FSA, is a type of public aid to low-income farmers which is not expensive to the government, and which offers a means of promoting steady year to year improvement in the income and standards of living of such families.

It has been possible through loans for farmers to acquire or to replace work stock, to buy farm implements or to improve their quality, to acquire live stock, to provide needed work clothing and some Sunday clothes; to get medical treatment to remove health handicaps and to obtain necessities for some of the comforts of living; along with steam pressure cookers and other equipment to make it possible for the home to make its greatest contribution to the family living and family income. Since these rural rehabilitation loans are largely in the nature of character loans made to

families who do not have resources to use the production credit associations and other equivalent loaning agencies, a study of the family is essential. The rural rehabilitation loan has, therefore, an economic and social base.

The rural rehabilitation loan is a definite and direct public aid to the development of human resources, which is bringing a return with little ultimate loss in appropriated monies to the government.

In the loans to low-income farmers of the South, the entire family is considered. The home plan is considered to be of as great importance as the farm plan. The home management supervision is made equivalent to that of the farm. Production of home food supplies necessary for the family is a first requirement. The pantries in the homes of rural rehabilitation borrowers are stocked full of canned and dried foods. The housewives in these homes know what their canning budgets are and can usually assert that there are as many filled cans in the pantry as this budget calls for. Sanitation, homemaking, and family welfare are stressed.

The improvement of tenure arrangements has been made a definite part of the Rural Rehabilitation program. Written leases are made a requirement for obtaining a rehabilitation loan and the provision is made that the lease must be for a length of time equal to the repayment periods on the loan. The lease form devised by the Farm Security Administration is finding wide use. Demonstrations of improved leasing practices are being made on plantations leased or owned by the Rural Rehabilitation Corporations and plantations leased for a period of years by groups of rehabilitation clients. The difficulties encountered in the beginning in making leasing arrangements for clients are breaking down and today there is some solicitation on the part of landowners to lease their lands to clients or to groups of such clients since there is evidence of improved handling of such lands under these leases and the farm plans made for and carried out by these rural rehabilitation families.

The voluntary Farm Debt Adjustment service has contributed to the saving of the equity in the land by those who were supposed to be owners, but whose right to ownership was largely in name only. The farmer hanging on by a thread, and it tied together with faulty knots, has been given a prop through Farm Debt Adjustment and Rural Rehabilitation loans to increase his efficiency.

The Community and Cooperative Service loans to low-income farmers have made available to them means for increasing farm efficiency not available to individuals with limited operating capital. Purchases of heavy farm machinery such as mower and rakes,

discs and power machines, syrup mills, purchases of jacks and other breeding animals, establishment of plant production units, insurance on work stock, medical services along with other miscellaneous types of needed services, have been made available from these loans. The possibilities of such loans have not been fully realized and further opportunities for their profitable use are many.

The South has furnished an excellent field for resettlement by communities and infiltration. The density of the population on submarginal lands purchased was greater than in other areas with more families to resettle from such areas. There were large numbers of tenant farmers awaiting the opportunity to make the start toward home ownership who pressed for a chance. There were fertile plantations belonging to absentee owners which could be purchased cheaply for cash. The number of resettlement projects in the South is, therefore, relatively large. Different patterns have been followed in the planning of these projects. Most of them are of the individual farm pattern. Others are cooperative with a close village type of community for the residents and wide, open plantation fields on which machinery may be used for maximum efficiency. Others combine the individual holding with some cooperative farmed crops such as sugar cane in South Louisiana or cooperative pastures on the cut-over lands in South Mississippi.

Cooperative gins, stores, meat canning plants, sweet potato storage, feed mills, pure bred sires and other such enterprises are available on the community projects. Community facilities for educational, recreational, and religious activities are provided. Libraries and nursery schools in cooperation with the WPA are being maintained.

It seems evident now that the people living in new, comfortable, attractive homes surrounded by these modern community facilities will pay the annual payments for the ownership of these farms with something less than they have formerly paid for rent under the usual rental terms on lands which they have farmed. The resettlement homes are the top awards for the efficient needy—the gold medal for winners. The number of these homes and farms available for those who are ready to make a start toward ownership is very small. The activity in establishing such communities is now restricted. A valuable contribution to farm ownership, farm living and community development is being made by the projects which have been established.

The Tenant Purchase loans under the Bankhead-Jones Act are most extensive in the South where both the number of farmers and the percentage of farm tenancy are high. The average loan in the

South will probably not average much over $3,500 over a period of years, making possible more loans from an equivalent amount of money than in other areas where land and farm buildings are more expensive. This program is popular. It appeals to all classes of people. It follows the traditional pattern of establishing farmers on individually owned farms in already established communities with facilities for living and farming about on a par with those of other farmers in the communities.

It is too early to evaluate the effects of these tenant purchase loans. The number of such loans available to tenant farmers in the South is not sufficient to be of any great significance in starting tenants toward ownership. If the present program points the way to an effective means of increasing the number of owners, as it appears it will, perhaps the funds available for such loans may be increased to a point where striking changes in farm ownership may be evident.

Aid to some farmers is being given this winter through the works program of the WPA. Because of limited funds, only a small portion of the southern farmers certified as being in need has been able to obtain work. Participation of needy farmers in public works programs during seasons when there is little or no demand for labor on the farm affords one means of adding to the incomes of such farmers. The use of farmers on Soil Conservation work on private lands offers a chance for the further conservation of the soil resources while work aid is being extended, thus giving aid to both physical and human resources through one program.

Direct grants to needy farm families have been made to meet emergency needs and raise the level of living of the families to that necessary for reasonable health and safety to the community. Grants have been made to build sanitary toilets, to obtain a sanitary water supply, to provide necessities of family living where these could not be provided with loans which the farm plans would justify and where there was opportunity for rehabilitation of the families on the farms. This type of aid is necessarily limited and used only to give the first lift to a very needy family which has the essentials for rehabilitation.

Achievements in the field of public aid to low-income farmers cannot be fully portrayed by statistical data. There is evidence of achievement in the repayments on loans, the increase in assets of families aided by loans, the increased returns from the planned farming operations, the additions to the family living budget from the farm and other types of data which the economists and statisticians have worked out in the keeping of records that show far-reaching results. The most evident results, however, are shown

in the reaction of the farm families themselves: their pride in owning a good team; the satisfaction of a varied and ample food supply; children properly clothed and given a chance to go to school; improved health; gratitude for kindly guidance in planning and carrying out plans for farm and home improvement; reconstructed ambitions and renewed hopes.

The start which has been made toward public aid to needy farmers of the South serves as a pointer to a program which will reconstruct the valuable human assets of this area and bring returns to industry throughout the nation. I list eight suggestions for such a program:

1. A continuation and broad expansion of the farm and home planning, supervision of these plans in operation, and loans as now provided in the Rural Rehabilitation program.
2. Further loans for small cooperatives to give opportunity to groups of low-income farmers to obtain equipment, animals and power to improve their efficiency, which cannot be obtained individually on small scale operations.
3. Continued aid in farm debt adjustment until the difficulties of the period of land speculation and subsequent depression are properly adjusted and farm owners' equities in lands on which they have made considerable payments are established.
4. A renewal of land purchases for establishment of agricultural communities, the further increased purchases of lands now definitely submarginal where people are trying to make a living, and moving such people to the fertile lands surrounding the new communities.
5. Considerable expansion of funds for tenant purchase loans to give worthy tenant farmers the start toward ownership and security on the land.
6. A broad program of rural housing with such subsidies as may be needed to replace the health breaking shacks in which so many farm families now live, with comfortable, livable, sanitary homes.
7. Medical services for farm families to give full health protection and preventive medical advice at a cost which the low-income farm family can afford to pay.
8. Coordinated effort to make all programs for the advancement of agriculture touch the low-income group and bring directly to this group the advantages which such programs offer.

Enlarged purchasing power of southern farmers, strengthening of the human fabric of the South, and new vitality to the nation would result from following such a course. The South and the nation would benefit from the achievements that would accrue from a more extensive program of guided public aid.

TYPES OF LIVESTOCK MARKETS AND THE PRICE STRUCTURE

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For this discussion markets are classified in two groups: (1) those in which prices are readily and promptly available and (2) those for which prices are largely unavailable. That means taking the public markets as the first group, largely those with BAE market reporting service and local markets as the second.

Price Relations, Central Markets

The question of price relationships between the central markets may be considered from three standpoints, those of (1) sellers of livestock, (2) buyers of livestock, and (3) sellers of meats. All three types of relations result from various factors, major ones being heavy livestock production in the west coupled with major meat consumption in the east, a continuous movement of livestock and of meats from west to east resulting; and operation of processors on a national basis, both in purchasing livestock and in selling products. Prices on the public markets are available to all but for local markets price information is both scant and unreliable.

The situation from the standpoint of sellers of livestock is generally understood, price differentials between markets, west to east, being approximately the differences in freight and shipping expense although the relationships between markets have been subject to frequent shift.[1,2] In recent years these relationships have been less regular and less dependable, largely because of unusual supply conditions (droughts, etc.).

From the standpoint of buyers of livestock, the problem is one of relative advantage in obtaining supplies from different sources. For example, an operator who has bought large quantities of livestock over a period of years has the Buffalo market as his immediate source of supply. It thus becomes his basic market. In ordering hogs from other markets he takes into account differences in the items of freight, shrinkage, bruises, and mortality. Over a period of time he finds he can use hogs out of Indianapolis (comparable weights and grades) at 40 cents under Buffalo, Chicago and East St. Louis at 50 cents under, and the River markets at 75 cents under.

A packer operating plants throughout both the corn Belt and the East usually takes the Chicago market price as his base, sub-

[1] *The Cooperative Marketing of Livestock*, Nourse and Knapp, Appendix a.
[2] *Illinois Agr. Exp. Sta. Bul. No. 380.*

tracting what he has found to be average differentials (minuses) for livestock buying points west of Chicago and adding such differentials (pluses) for livestock purchases at points to the east.

An interior packer operating a single plant, must, if he is moving product to the east, price it at least in line with offerings by competitors operating on the basis of Chicago—Chicago thus constituting his price ceiling. Hence his livestock would be purchased on or below that basis—as much below as possible, naturally.

In the sale of meats it is said that most packers use the Chicago wholesale prices as a base. Good reasons for such practice are apparent. (1) Chicago is the largest wholesale market and packing center; (2) the two leading daily market services in the meats field are published at Chicago and use Chicago prices as their basis. I am told that most, if not all, packers' sales managers have on their desks every morning telegraphic quotations from one of these Chicago services.

Comparability of Prices, Central Markets

Prices at different markets are comparable only to the extent that grades, grading and weights are comparable. To the extent that prices thus quoted are on the basis of established federal grades, ascertained by competent and trained market observers, they are assumed to be comparable.

The Department of Agriculture has adopted official standards for market classes and grades for cattle, for calves and vealers, and for lambs and sheep. Tentative standards for market classes and grades of slaughter hogs were published in 1931, but they have never been made official.[3] In *Miscellaneous Publication No. 222*, 1935, p. 108, the Department reported "a total of 72 different systems of classifications [hogs] in use at 204 public markets, auctions, and direct buying points."

However, mere adoption of uniform systems of market classes and grades is not enough. They must be uniformly applied. Livestock to which the grade terminology is applied must fit the terms applied to them. There is room for much improvement in that respect, even on the major central markets. One illustration follows:

Last June 30, in the sheephouse at the Chicago Union Stock Yards, I worked through a shipment of Idaho lambs and considered that they could properly be described as *good-choice*. That day's market paper reported them as *choice;* the B.A.E. market

[3] At a sectional meeting of the American Society of Animal Production, Chicago, November 25, 1938, Mr. W. T. Reneker, Head Hog Buyer, Swift and Company, stated that all their hog buying operations are on the basis of these standards.

report listed them as *choice*. The incident was discussed with the B.A.E. men that same afternoon. As the lambs were slaughtered in Chicago they followed through for a report on carcass gradings on the entire lot. These gradings indicated, definitely, that the lambs had not been entitled to a rating above *good-choice*. Since lamb trading throughout the west is admittedly largely on the basis of Chicago prices, it is most important to producers that lambs sold at Chicago be at least as good as the grades reported for them.

This incident indicates an improvement that might be effected in the market reporting service. There are needed three traveling supervisors—one for cattle, one for lambs, and one for hogs—the best men to be had, thoroughly familiar with both the livestock and meats end of the business, to get out into the principal markets and to keep reporters at those markets on the same keys. The department recognizes the problem but its representatives say funds are not available for such service.

A statement by Professor Duddy is pertinent here, namely:

"The big problem before the market—news service is making more uniform the reporting of prices in relation to standard grades of livestock. Animals given the same grade at different markets vary more widely in price than the difference in transportation and handling cost would seem to justify. To the extent that this is true, price quotations according to grade in different markets are of doubtful value to those who read market reports. The market-news office is authority for the statement that standards are much more uniformly applied now than formerly.[4]"

The sheepmen of the West could make no better investment than to hire an expert man available on lamb marketing (thoroughly qualified on the meats end of the business) and to keep him in the field during the months of heavy lamb marketings—traveling between the more important markets, checking on trading conditions, on lamb grades and grading, and on comparative prices. A competent man could save sheepmen thousands of dollars weekly by such service.

Prices at Local Markets

Investigation in Illinois[5] showed wide variations between prices as posted on the bulleting boards in the yards' offices and those quoted in the local newspapers for the same day's market. Price margins (comparison with the competing terminal) were also found to vary widely on different weights of hogs in the same

[4] *The Changing Relative Importance of the Central Livestock Market.* Duddy and Revzan, University of Chicago Press, 1938, p. 19.

[5] See *Ill. Agr. Exp. Sta. Bul. 408*, pp. 457–483.

markets on the same day, as well as to vary between markets in the same area.

Comparability of price quotations between local markets is of course not to be expected in view of wide variations in sorting, in pricing, and in weighing. A nationally known investigator in the livestock marketing field told me recently that he had discontinued using prices from local markets because "they were not comparable and they were adjusted to meet the local markets' needs."

Whether all prices are reported is also important. At the central markets the usual practice is to include all sales of as much as a half carload lot, be the price high or low. On the other hand, Dr. E. L. Cady stated regarding BAE (Des Moines) reports covering hog sales at interior markets:

"In formulating the price ranges, out-of-line prices being paid at one or two remote stations and on special order are not quoted. The prices which seem to be abnormally low in comparison with the general price level are not published."[6]

One way to make prices sound good and look good is to omit low sales, but the packer buying those cheap hogs nevertheless had the advantage of them in pricing his meats. Certainly the low sales are a part of the price level to the sellers.

On the public markets, reporters sometimes have difficulty in getting the top sales—either because a buyer does not want the paying of the price to become known or because the seller, by covering up the sale, is in position to tell his customers that he sold consignments above the top of the market. No one seeks the distinction of selling below the market bottom.

Publications of Iowa have dealt with variations in hog prices.[7] I. W. Arthur[8] pointed out that the problem of selecting the best market has become a difficult one for many farmers; that price relations between markets change suddenly; that price changes are used to control receipts; that off-grade and off-weight hogs frequently net more at the terminals; that before sending hogs to the interior market farmers should obtain bids, have an understanding of how the hogs are to be sorted. Moreover, he cites areas in three Iowa counties where hog prices were relatively high, in four counties where they were low. Arthur infers that the Iowa situation is similar to that reported below as to Ohio.

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[6] "The Development of Direct Marketing of Hogs in Iowa," doctor's thesis, Library, Iowa State College, 1933, p. 24–28.

[7] *Research Bul. No. 161.* "Variations in Swine Prices Within Iowa . . . ," Schulz and Black, 1933; *Bul. 306,* "Cooperation in Agriculture . . . ," Miller and Sheperd, 1933.

[8] "Marketing Iowa Hogs," *Iowa Farm Economist,* October, 1937.

G. F. Henning has done valuable work on this problem.[9] Analyzing 1930–1935 prices at Dayton and at Cincinnati, both federally supervised markets, only 55 miles apart, and the Dayton market in a good livestock territory, he found Dayton hog prices ranging from 16 to 52 cents per cwt. below Cincinnati; calf prices 36 to 77 cents below; and lamb prices 62 to 141 cents below. Of special significance was the narrowing of those differentials in 1935. Comparing farm prices of hogs in five states Professor Henning showed that the Ohio price averaged below Indiana from 1933 to 1936. His characterization of some Ohio areas as livestock "price holes" is a striking one.

In a recent conversation a man occupying a responsible position in the meat packing industry expressed the opinion that the relatively low price for Ohio hogs has been a definite part of the buying program of important packers. It will be of interest to note future price relations of Ohio to other areas.

The Illinois study[10] pointed out how hog prices reported at Ohio and Indiana markets were low relative to Chicago and East St. Louis prices in 1933. An eastern operator told me in 1935 that our figures looked cockeyed. Now operating also in Illinois, he has told me frequently during the last two years how low hog prices in Ohio have prevented his selling Illinois hogs in the east.

In a Minnesota study it is reported that:

"It is obvious that hog producers having access to a number of markets must follow the prices of the various weight and grade classifications in all these markets closely if they are to sell their hogs to the best advantage."[11]

After all that we have heard about the keenness of buying competition, the certainty that competition between buyers assures the producer the full value of his livestock no matter where or how he sells, one is startled by some of the results arrived at by Professor Duddy;[12] for example—that in only one month out of sixty did the Chicago packer have a favorable difference in net cost of hogs in comparison with the Des Moines packer; that during January 1933, the Des Moines packer could have paid 39.5 cents more per 100 lbs. for his hogs and still have been on an equality with the Chicago packer buying hogs in Chicago; that the system of rates on livestock which prevails in Iowa and southern Minnesota would seem to indicate a deliberate policy on the part of the Interstate Commerce Commission to force decentralization

[9] *Ohio Agr. Exp. Sta. Mimeo. Bul. No. 90, No. 101.*
[10] *Illinois Agr. Exp. Sta. Bul. 408,* pp. 522–523.
[11] See *Farm Business Notes,* July, 1938.
[12] *The Changing Relative Importance of the Central Livestock Market,* Duddy and Revzan, University of Chicago Press, 1938.

in livestock marketing; and that the Iowa farmer has paid handsomely on more than one occasionin the last five years for the privilege of selling nearer home.

Note that his Des Moines analysis was of actual prices on actual grades and weights. It was not an analysis of market quotations. Swift and Company have rendered a public service to the livestock industry by making their Des Moines records available.

Much attention has been given to price averages, in various types of livestock studies. Producers would be much better served if the frequency and extent of price variations were disclosed, their significance to stockmen explained and emphasized.

Bargaining Position

To the extent that there is free and open competition in livestock marketing operations both the selling and the buying side should have an influence in determining the price—in deciding what interpretations are to be placed on those supply and demand factors which presumably establish the price at which sales are consummated. It is this ability to have a voice in price determination, be it great or little, that may be referred to as bargaining power.[13] Its importance in livestock marketing demands careful consideration of the relative bargaining position of buyers and of sellers in this field.

Taking the buying side first, the situation may be briefly summarized as follows:

1. Federally inspected slaughter accounts for approximately two-thirds of total cattle and calf slaughter; 60–65 per cent of total hog slaughter; and 77–80 per cent of total sheep and lamb slaughter.[14]
2. The Packers and Stockyards Administration indicated 188 concerns slaughtering livestock under federal inspection for the fiscal year 1937.[15]
3. The BAE reports that 4 concerns, of the entire 188, for the 5 years 1933–1938, handled 52 per cent of all hogs slaughtered under federal inspection, 65 per cent of the cattle, 71 per cent of the calves, and 80 per cent of the sheep and lambs.[16] In orders words, 5 out of every 10 hogs, 6.5 out of every 10 cattle, 7 of every 10 calves, and 8 of every 10 sheep and lambs go to 1 of 4 buyers—regardless of where or

[13] Various authors recognize bargaining power as important in agricultural marketing, especially by cooperatives—among them: Clark and Weld, *Marketing Agr. Products*, 1932, p. 564; Maynard—Weidler—Beckman, *Principles of Marketing*, 1927, p. 380; Converse, *Elements of Marketing*, 1932, p. 171. It is important everywhere, to all sellers of livestock.

[14] *Livestock, Meats, and Wool Market Statistics*, 1937, U.S.D.A., B.A.E.

[15] *Summary of Reports Covering Operations for the Year 1937 . . .*, Packers and Stockyards Division, Bureau Animal Industry, U.S.D.A.

[16] "Livestock Slaughter by Four National Packers," The Agricultural Situation, Bureau Agricultural Economics, August, 1938, p. 21.

how producers sell. That would leave 48 per cent of the hogs, 35 per cent of the cattle, 29 per cent of the calves, and 20 per cent of the sheep and lambs to be distributed between the other 184 concerns.

From the above summary it is obvious that control of the meat packing industry is highly centralized (despite much loose talk about decentralization) and that buying of slaughter livestock is correspondingly centralized.

On the selling side quite the opposite situation obtains. It may be briefly described as follows:

1. Half the hogs, approximately one-third of the calves and of the sheep and lambs, and nearly one-fourth of the cattle are being sold outside the public stockyards.
2. Sellers on the public markets have practically no day-to-day information as to volumes or prices of livestock selling at country points.
3. Country selling is through a multitude of local markets, almost entirely uncoordinated as to sales, with a great portion handling relatively small volumes.
4. Sellers, even on the central markets, often are not as well informed as are the buyers.
5. Local market operators, generally, are not as well informed as are central market operators, in many cases they are not skilled salesmen.

It is clearly apparent, even assuming free and open competition between buyers, that livestock sellers are at a disadvantage as to bargaining position. If the term buyers be substituted for selling agents, and sellers be substituted for agents, the following statement fits our situation:

"On the one hand there were a small number of selling agents [buyers] whose operations could be controlled, on the other hand a motley assortment of too numerous agents [sellers], some of whom were consignees, some consignees and salesmen, and some combined merchant, salesman, and consignee, the result being a contrast between a definite continuous selling [buying] policy, and the loose irregular operation of many conflicting interests."[17]

Apt indeed is this: "Not only goods but sellers must be 'standardized' under pure competition."[18] Unfortunately there is no good reason to assume free and open competition. Some economists now hold that livestock buying competition should be studied from the point of view of monopolistic competition, not on the continued assumption of free competition. For example: "The

[17] "Argentine Meat and the British Market," Simon G. Hanson, Stanford University Press, 1938, pp. 61–62.

[18] "The Theory of Monopolistic Competition," Edward Chamberlin, Harvard University Press, 1935, p. 7.

question is squarely presented of whether competitive theory should be applied at all where monopoly elements are present."[19]

Buying Competition

As to buying competition, one can find almost any sort of statement. The uncritical may be satisfied with such expressions as:

Demand and supply determine prices.[20,21]

Competition of buyers is so intense and incessant that it becomes impossible for any packer to buy live animals for less than they are worth.[22]

Neither the method nor the place of sale affects the general price.[23]

The housewife sets the price of meat—the price of livestock.[24]

Markets stay in line—it makes no difference where producers sell.[25]

But if one be a realist he may inquire what evidence, official preferred, is available as to the extent to which free competition obtains, and which may be considered as reflecting the real attitude of buyers toward open competition. Five official documents deserve attention in that respect.

First, P. & S. Docket No. 269 (1927) in which the Secretary of Agriculture charged the Hormel and Rath packing companies with division of territory in buying livestock. This complaint was finally dismissed.

Second, is the proposed code submitted to the AAA by the Institute of American Meat Packers[26] in 1933, and recommended by the Institute. It proposed, among other things, that the supply of livestock should be

[19] "Economic Planning and International Order," Lionel Robbins, Macmillan, 1937, p. 116.

[20] See "Marketing Livestock and Meats," Armour and Company, Chicago, 1929, p. 103.

[21] Note this statement, p. 156, Hanson's "Argentine Meat and the British Market": "So, for once, at least, the American packer found friends in the sellers of stock. If he wanted to use his favorite generality that 'prices are determined by supply and demand and there is nothing we can do about it' his friends were in complete agreement. 'The North American trust can never dictate prices or conditions to the estanciero,' La Prensa was told by the President of the Sociedad Rural, 'for the meat trade of today is subject to the law of supply and demand.' "

[22] "50th Anniversary Year Book," Swift and Company, Chicago, p. 18.

[23] "Things You Should Know About Direct Marketing," Association to Maintain Freedom in Livestock Marketing, Des Moines, 1934, p. 14; also, "Vital Facts," Number 7, same organization.

[24] See "Who Makes the Price of Meat," an address by President R. H. Cabell, Armour and Company, before the Chicago Association of Commerce, Chicago, December 4, 1935; also "The Cattleman," December, 1937, p. 38; also "Vital Facts," No. 28, Association to Maintain Freedom in Livestock Marketing, Des Moines, 1938; also "Regulation of Business," address by President Cabell of Armour and Company before Texas and Southwestern Cattle Raisers Association, San Antonio, Texas, March 9, 1938.

[25] "50th Anniversary Year Book," Swift and Company, Chicago, pp. 23–24.

[26] See "Marketing Agreement for the Meat Industry Including Slaughtering of Livestock and Processing and Wholesaling of All Products of Livestock," a document recommended by the Executive Committee of the Institute of American Meat Packers, August 15, 1933, and considered in a public hearing before the Secretary of Agriculture shortly thereafter.

allocated among packers. While this proposed code did not become effective, it may be properly considered as evidence of what leaders in the packing industry regarded as the most desirable method of obtaining supplies of livestock.

Third, is P. & S. Docket No. 440 (1934), charging twelve packers (including the Big Four) with exchanging information on meat prices, with a view to forcing certain competitors out of business; with attempting to manipulate and control prices; with conspiring and agreeing to control prices for the purpose of forcing certain competitors out of business.

A cease and desist order was issued by the Secretary of Agriculture. This order was not contested by the respondents.

It may be contended that this complaint dealt with methods practiced in the sale of meats, not in the purchase of livestock. But if they proved effective in meats what would prevent their employment as to livestock?

Fourth, is P. & S. Docket No. 580 (1936), a complaint against Armour and Company and against Swift & Company, charging the use of discrimination and other unfair practices.

A cease and desist order was issued against Swift & Company, the latter taking an appeal against the Secretary's order. It is assumed the action against Armour and Company is in abeyance, pending the outcome of the suit brought by Swift.

Fifth, is P. & S. Docket No. 909 (1937), a complaint against the Big Four and against three produce companies, charging manipulation and control of prices at which packer products were purchased; with apportioning territory and apportioning purchases; with refusing to buy from certain sellers; with agreeing to apportion livestock purchases; with manipulation of prices; and with conspiring and agreeing to apportion purchases.

Extensive hearings have been held in this case and presumably will be continued. Reference follows to testimony presented by three of the witnesses heard.[27]

Mr. Fred R. Green testified that he served as a hog buyer for Swift and Company at the St. Joseph stockyards from 1914 to 1925, that during that time there was an understanding that Swift took half of the hogs available on that market, after shipper purchases were deducted; and that each day the local Swift buyers obtained figures on the other packers' total buy and average cost and wired that information to the Swift offices at Chicago.

In the course of the Chicago hearing a former secretary to a local Chicago packer during 1932 and much of 1933 testified that it was the daily custom of this packer to telephone the hog buyers' offices of Armour and Swift, as well as officials of certain local Chicago packers before the market opened, obtaining and exchanging information regarding plans for hog-buying operations and hog prices for that day on the Chicago market.

[27] The statements that follow are based on the official stenographic minutes of the hearings referred to.

In the Chicago hearings, also, Mr. Ralph Schaaf testified that for about six years (1918 or 1919 to about 1925) he bought hogs on the Chicago market for the Boyd-Lunham Company, and that his instructions were to buy up to five per cent of the receipts but not to exceed that proportion.

But, one may say, what is the significance of these citations to producers and sellers of meat animals? The answer is that they indicate a more extensive limitation of buying competition than has been generally understood by stockmen to occur, and that they suggest the great need of stockmen organizing their selling operations more effectively in order to deal with the buying side on a less disadvantageous basis than now obtains.[28] Further, they emphasize the significance of centralization in livestock buying.

In discussing this subject with a buyer of wide experience he remarked that the more important competing buyers have to have some understanding—certainly as to volume each is to get, possibly as to prices—"otherwise we would have perfectly crazy markets." On this question Robbins says:

"It is well known that when the market for any particular commodity is dominated by a few large concerns, then, unless there are agreements between them, the fluctuations are large and discontinuous."[29]

One of the smaller public markets is reputed to be a really open and competitive market. I am told, reliably, that recently certain packers approached the management relative to an *agreement* whereby those packers would be *assured* a larger proportion of the receipts available on that market.

The above citations suggest closer attention by stockmen to packers' buying practices, such as the possible use of area prices, divisions of territory, divisions of market receipts, and any other measures tending to restrict competition on the buying side.

Livestock selling has generally been conducted on the assumption of free competition on the buying side. That may have been a bit too inclusive. At any rate it is evident that if any reasonable degree of free and open competition is to be maintained in the livestock markets the burden of maintenance rests with the selling side. Market experience has repeatedly shown that.[30]

Finally, the amount of money a seller receives for his livestock is governed by three factors: (1) the price per pound in relation to grade; (2) the grade into which the livestock is sorted; and (3) accurate weights. It is not necessary to point out the disadvantage under which many farmers sell in each of these respects.

[28] See also "Some Alternatives in Livestock Marketing," Bul., Illinois Farmers' Institute, Springfield, Ill., 1937.

[29] "Economic Planning and International Order," pp. 77–78.

[30] *Ill. Bul. 408*, p. 543.

The Question of Price Structure

One may well ask, of what importance is a price structure to livestock producers, how do different types of markets influence price structure, what is the attitude of producers toward supporting an effective price structure, and what can be done by way of improving the present situation.

The first part of the question pretty well answers itself. If Ohio, for example, sells 3 million hogs at 200 lbs. average weight and at a price 10 cents per cwt. low in relation to prices in other states, Ohio hog producers are paid $600,000 less for that crop than they were apparently entitled to. Similarly, if Iowa sells 10 million 200-pound hogs at the same disparity her producers receive $2,000,000 less than they might have had.

Henning has suggested that in extensive areas of relatively low hog prices it is desirable to ascertain whether wholesale and retail pork prices are also correspondingly low.

Existence and general recognition, of an effective price structure would encourage stockmen to sell up to a price standard instead of merely accepting what appeared to be the best available bid; it would simplify packers' livestock buying problems; and it should tend to discourage price chiselers (both in livestock and in meats). If it did nothing more than to strengthen the low spots, to fill up the "price holes," it would be tremendously worth while. With "price holes" filled and low spots strengthened it should be easier for sellers to hold markets in line and to develop the full potential of the market. Now the buyers operating on a national basis use the low spots as leverages against the strong spots. We face here one of the basic problems in the whole field.

Some may contend that the packing industry always pays the maximum total amount of money for livestock purchased, that raising prices in one area must lower them by a corresponding amount elsewhere. Producers have accepted that theory too long. Certainly they can afford to challenge it, to try another basis of action.

Further, to the extent that free competition obtains in the market, there is a trading range in the price, sometimes narrower and sometimes wider, on every class of livestock. Just where the price is finally established depends upon the relative bargaining position and trading ability of buyers on one hand and of sellers on the other. If through bargaining position and trading ability sellers establish the price in the upper portion of that trading range packers adjust themselves to it.

In no other way will livestock sellers obtain the full strength of the market, and that system of selling must be employed in all

markets before it can become really effective. The resultant price improvement will come slowly, a nickel at a time, but a few nickels on a few million head of livestock represent real money.

Packer opinion of the importance of small increments in price is well illustrated by this sentence: "The whole organization gave real meaning to our slogan 'Get that $\frac{1}{8}$ to $\frac{1}{4}$ extra,'"[31] [meaning probably $\frac{1}{8}$ to $\frac{1}{4}$ cent per pound] and this: "Our motto should be that everything can be improved."[32]

Relation of Markets to Prices

Whether a market is price-supporting or price-weakening is not difficult to decide. If the salesmen in a market are competent to interpret demand and supply conditions accurately, if they are approximately equal to the buying side in trading ability, if they have sufficient volume of livestock for sale (including top grades), and if there is sufficient competition on the buying side to enable sellers to develop the potential strength of the demand the resultant is a price-supporting market—a market that obtains for each kind of livestock the full value that market conditions justify it in selling for on that day. Usually that means disposing of each kind of livestock to the buyer or buyers who can use that particular stock to the best advantage and hence can pay the highest price for it.

To the extent that a market lacks in any of these important respects it becomes less effective and usually depends upon some other market for its price key. A surprisingly large number of so-called markets today establish their prices practically entirely on another market, leaving to the base market the whole burden of establishing and maintaining prices. My experience and observation indicates that most local markets belong in the second class. A number of so-called central markets would also belong in the second division. There is a reason for that condition.

For the packer buying both at a central market and at local markets, the former would seem to constitute his price ceiling. However, many factors enter into the question.

For example, a Chicago packer may have paid practically Chicago prices for hogs at an outside point and shipped them to Chicago; yet salesmen may have had difficulty in selling Chicago hogs to that packer's buyers, their bids being below the Chicago market. What reasons might explain such a policy? Several ex-

[31] From annual statement by President R. H. Cabell, Armour and Company, to the Armour staff—see *Armour*, a monthly magazine published by the company, November, 1937.

[32] Same issue, same page, from statement by Mr. Frederick H. Prince.

planations might apply—one can only theorize. First, if this packer were buying actively at Chicago, one might infer that some agreement as to divison of receipts restricted his market operations. Second, he might want more hogs but buy no more on the Chicago market because to do so would increase the Chicago price and very likely strengthen prices at other points where he might be buying. Third, he might buy outside, use that supply as a means of influencing (manipulating) the Chicago price. Fourth, he might seek to increase receipts at the outside point at the expense of market receipts at Chicago.

Consider a Chicago packer, buying both direct and on the Chicago market, and paying at times a slightly higher price for directs than his buyers would bid on the open market—as stockmen claim is sometimes done. If one seeks possible reasons, several are possible. First, a desire to expand the packer's volume of directs at the expense of the market. Second, to get more hogs without crossing up a possible division of market receipts. Third, to expand his hog volume without increasing buying competition on the market, thus probably raising the price. Fourth, to secure outside hogs as a lever with which to influence price on the market.

In either case a mere comparison of prices would not adequately reflect the situation from the standpoint of the livestock seller. An analysis that did only that would represent a grave disservice to stockmen who might accept it as an adequate study of the market.

The interior packer must either pay close enough to competing central markets to discourage shipments to them or create a general understanding that he does so pay. The latter is an important factor.

The Association to Maintain Freedom in Livestock Marketing, in one of its pamphlets,[33] aks this question: "Does selling direct yield the producer a higher net return?"; and answers: "Yes; producers average a net return of about 25¢ a hundred pounds more on livestock sold by this method, . . . "

In some areas it is pretty much taken for granted that country sales necessarily net more than sales through the public market. This is not a safe assumption at any time. Analyzing country sales by the Illinois Livestock Marketing Association, 1931–34, H. H. Hulbert showed how their margins over the public markets steadily declined until in 1934 many sales were netting less than if the stock had moved through the public markets.[34]

A private study was recently made, comparing costs at one

[33] *Things You Should Know About Direct Marketing*, Des Moines, June 1934, p. 7.

[34] "Organization and Operation of the Illinois Livestock Marketing Association," *Bul. No. 5, Cooperative Division*, F.C.A. 1936, p. 90.

plant, of hogs bought off trucks at the plant, of purchases at country concentration points (local markets), and at the public stockyards (near the plant). Hogs purchased at the public stockyards showed the highest cost, those at local markets a lower cost, and those bought at the plant the lowest cost. But, as nearly as the investigator could ascertain, the net return to the farmer was essentially the same regardless of which channel he used. The study included many thousands of hogs.

The proponent of direct selling might argue from this that a farmer was foolish to patronize either a local or a central market if he could net as much by selling at the plant. The supporter of the open market might well contend that the producer was not serving his own interests by going around the public market when he secured no increased return thereby. Again the basic question, finally, is whether the producer needs organized markets and sales agencies or whether he can better do his own selling.

In any case there is grave need for a constructive sales policy on the part of livestock producers, whether selling in the country or on the market. If livestock marketing is to be considered a business (an industry selling 3 billions of dollars worth of product yearly should aspire to that basis), it must develop a better coordination between country and market sales.[35,36] Producers selling direct have retained too little of the advantage for themselves. Instead, most of the advantage has accrued to the buyer, the producer thereby definitely underselling his own market. Here is a striking example of passing all the benefit to the buyer: "The cost of marketing hogs from Eugene to Portland is about 1 cent a pound, or 1½ cents from the farm to Portland. It is therefore recommended by the committee that when hogs are quoted to buyers on the farm, they should be quoted at 1½ cents per pound below Portland."[37] Fine, for the buyers.

The writer has reported elsewhere[38] the experience of the Animal Husbandry Department, University of Illinois, in early 1938 in selling hogs through a local market at a wide margin below the public markets. Apparently the professors, like many farmers, assumed the local market was paying in line, didn't trouble to find out for themselves.

As livestock selling becomes more decentralized, the individual producer must assume more of the responsibility formerly dis-

[35] *American Cooperation 1936*, pp. 315–316.
[36] *Ill. Bul. 408*, pp. 565–567.
[37] *Report of the Lane County Agricultural Outlook Conference*, Eugene, Oregon, January 14–15, 1930, p. 30.
[38] "Selling for the High Dollar," an address before The Agricultural Club of the Chicago Agricultural Association, July 25, 1938.

charged by the salesman on the public market, or leave more and more of the transaction to the buyer.

The decided trend toward decentralization in livestock selling has seemed to farmers to bring certain advantages, but it has also had effects that are not entirely constructive. Among the latter, it has:

1. Centered farmers' attention on marketing costs instead of prices; diverted their attention from costs as but one factor in prices;
2. Caused farmers to regard the number of buyers or buying points as a direct measure of the degree of buying competition;
3. Encouraged the idea that every producer is competent to sell livestock—that the radio makes every farmer a qualified salesman;
4. Overloaded the livestock industry with markets and selling agencies; and
5. Increased packers' buying costs.

A great portion of these so-called markets handle too small a volume of hogs to sort and grade effectively, to attract effective buying competition. During the last two years, even our best Illinois local markets have handled so restricted a volume of hogs that their sales outlets have been limited to a very few buyers. The managers have told me that situation lowered their possible selling price by 10 or 15 cents per cwt. on many market days. Yet large numbers of local markets operate under that condition a greater part of the time.

Asked whether feeders can expect to sell their own cattle in the country, two of the ablest packer buyers I have known—both now retired—say that not one per cent of cattle feeders can expect to know grades and grading well enough, to keep well enough posted, to sell their cattle safely in the country; that the most expert operators must be on the market every day to really know the market.

Much is heard about the central markets being outmoded, about evolution and progress replacing them with "streamlined" marketing methods. Maybe that is all true. Note Professor Duddy's statement however: "Unless it be the deliberate policy of the Interstate Commerce Commission to compel decentralization there seems to be no other logic in the system of rates on livestock which prevails between the rivers in Iowa and southern Minnesota."[39] The same statement would apply to certain rate conditions in other states.

Moreover, one should not forget that a big factor has been the struggle between groups of packers for definite competitive advantage in securing their supplies of livestock.[40] Should that

[39] Page 119.
[40] See JOURNAL OF FARM ECONOMICS. XI. (2), 310.

competition stabilize, it is possible that such stabilization might generate another evolution in livestock marketing.

Had livestock producers been effectively organized, adequately informed, and competently led, they could have been a positive factor in the developments of the last 15 years. On the contrary, their role has been largely passive, going along with this or that shift as it appeared.

Whether it be evolution or revolution, livestock producers are disintegrating a fairly well organized system of public markets into a very large number of local markets and country buying-points, by far the most of them privately operated; shifting back from public marketing to private trading between farmers and country dealers, country dealers and packers, and farmers and packers. Already the tendency toward wider variations and increasing confusion in prices is clearly apparent. How much farther the disintegration will go, how general the price confusion may become, remains to be seen. One is challenged by Professor Duddy's pungent statement: "It is reasonably clear that the principle of 'shopping around for price' and 'selling for the high net dollar' had, by 1936, effectively disintegrated any attempts on the part of Iowa shippers to build up an effective marketing organization for collective bargaining." It could be applied in other states. Recognized leaders in the livestock field are already discussing the possible necessity of the government fixing prices on meat animals.

Farmer Attitude Toward Price Structure

It has been my experience that stockmen's price attention is limited largely to quotations commonly available in their usual marketing area. They do not try to think behind these quotations, to inquire how producers' sales and selling methods may be affecting those quotations, whether sales can be made with a view to supporting prices. Most livestock producers have as yet recognized no responsibility in helping to support and maintain prices.

If one seeks reasons for this attitude there are many, among them:

1. The sale of one lot of livestock is apparently a simple matter, but effective marketing of the country's meat animals is a very complex business. This apparent contradiction has caused much confusion of thinking.
2. Lack of understanding of livestock marketing operations by farmers. This is not surprising—it is only in the last twenty years that any considerable number of farmers have begun to think in terms of doing their own livestock marketing.
3. Failure of marketing experts, federal and state, to teach and to support a positive conception of livestock prices, to tell farmers what could be done to support and to strengthen prices.

4. Lack of a unified, definite, sound, and aggressive livestock marketing program by farm organizations.
5. Wide and continuous circulation of slogans and propaganda tending to nullify any thought that farmers can have any influence on prices. As examples of such statements consider these:
   a. Demand and supply determine prices—with no explanation of what these terms are taken to mean or of how these forces operate; as if some invisible agency marked one specific price on each lot of livestock wherever offered for sale.
   b. The competition of buyers is so intense and incessant it becomes impossible for any packer to buy livestock for less than they are worth. That is a gem. It needs no comment; is a fine example of not allowing facts to cramp one's style.
   c. The method of marketing, whether through the central markets or the numerous interior outlets, can have no influence on the general level of livestock prices.

      It has been shown that considerable portions of whole states can sell hogs below the general price of hogs, but, according to c, that can have no influence on the general level of livestock prices. Freight rate relationships may require a whole region to sell its hogs at prices that are relatively low, but again, according to c, that can have no influence on the general level of livestock prices.
   d. Any increase in marketing expense means just that much less net income from the livestock—true only if the livestock sells at the same price at every point where it may be offered for sale.

One remedy for this indifference is to spread constructive information on the question of prices; to point out how easily producers can undersell their own market, how destructive such practice is, how necessary that "price holes" be filled up, that low price spots be leveled up. In order to do these things, producers must be better informed on what prices should be, must understand the importance of a general price structure, sell up to it. And it is idle to expect that they can do that operating as individuals or as local groups.

Improvement

For years livestock producers have had endless advice as to what they should do—much of it from interested parties. It is evident that livestock buying is highly centralized, thoroughly organized, and performed largely by skilled and trained men. On the other hand, livestock selling is becoming more and more decentralized, more unorganized; and an increasing volume of the selling is being done by men who do not have adequate market information, are short on training and experience in selling.

It is suggested by certain recognized marketing specialists that what is needed is the establishment of large local or regional mar-

kets, each possibly serving parts of several counties. It may be pointed out that for several years such a plan has been in process of development in Ohio, with success still unrealized. It was tried in Iowa by the Iowa Livestock Marketing Corporation, the latter raising the level of hog prices at every buying-point opened—but failure resulted. For several years the Illinois Livestock Marketing Association has been operating cooperative concentration points, much of the livestock being sold direct. Net advantages of the plan are still in doubt.

Experience in these states does not prove that the plan is unworkable, but it does suggest that there are very real problems to be solved in making it a success.

Just recently a marketing official of a leading eastern state recommended "that the future set-up of the livestock marketing system should provide regional livestock markets where direct-sale, the commission method of selling, or the auction could be conducted as conditions warrant."[41]

Actually, numerous regional markets have been, and are being, operated in the Corn Belt, mostly by packers or by private owners closely associated with packing companies.

Livestock producers will, by their selling practice, determine what is to be done. But to the extent that they have confidence in the U.S.D.A., in the agricultural colleges, and in their own farm organizations, recommendations by those agencies would carry weight.

There is need for presentation to stockmen of a broad, practical, and sound marketing program, one that will be supported by all major groups. The following outline is submitted as a basis for discussion.

General

1. Urge livestock producers to consider industry as well as individual interests in conducting their selling operations.
2. An organized, coordinated selling system must be set up if sellers are to deal with buyers on anything like an equal bargaining basis.
3. Producers must recognize and accept individual responsibility to the development of a sound and successful program, be willing to get behind a plan and see it through.
4. An equitable and harmonious price structure must be developed and maintained if low price areas and "price holes" are to be eliminated.
5. Competent sales agencies must be maintained and skilled salesmen employed if sellers are to receive prices that reflect the full potential of the market.
6. Livestock marketing must be dealt with as a national problem. It cannot be solved on the basis of local, county or state action.

[41] See Marketing Activities, Bur. of Agr. Econ., U.S.D.A., Nov. 16, 1938.

Specific

1. Strong, well-staffed central markets are essential under existing conditions—at least until some other system has proven its superiority.

   Improvements are needed in the central markets, will come whenever enough producers demand them. Too many commission firms? Farmers keep them there. Stockyards' charges too high? Producers can secure more vigorous enforcement of the Packers and Stockyards Act if they show they are in earnest about it.

   But central markets cannot do their job effectively without adequate producer support.
2. Patronize only the strong sales agencies on the central markets, eliminate the weak ones, thus strengthen the whole market.

   Only livestock sellers can bring that about.
3. Decide how many local markets are really needed, where they should be located (with respect to improved roads, other transportation, markets and packers). Eliminate all the rest, by cutting off patronage to them. If farmers want to reduce marketing costs here is a way to make a real start.
4. Patronize only those local markets that keep their prices fully in line with the general price structure, that use standard market classes grades in sorting and pricing all livestock, and that demonstrate (continuously) accuracy of scales and honesty of weights.
5. Sell outside of the established markets only when certain of obtaining a higher net price, enough higher to justify going around the market (at least 15 cents per cwt.), and when such sale will not weaken the established marketing system.
6. Patronize only those markets, central or local, that work together in coordinating sales and in supporting price levels.

We, as marketing men, are responsible for developing sound factual information for use by producers in conducting their marketing operations. Here is a pertinent comment, and a challenge: "Economists who in recent years have made a technical analysis which assumes other things to be equal, the basis of prescriptions as to policy in cases where other things are almost certain not to be equal, have done a grave disservice."[42]

Summary

Due primarily to the large movements of livestock and of meats from west to east, there result fairly definite relationships between central market prices, both in livestock and in meats.

There is some question as to comparability of livestock prices, as quoted, even between the major markets.

Prices are generally available from the central markets, largely unavailable for the local markets (often unreliable).

[42] *Economic Planning and International Order*, p. 316.

Decentralized livestock selling, in view of centralization in livestock buying, has weakened the bargaining position of the selling side.

Continuation of "imperfect competition" on the buying side is to be expected.

Importance of an effective price structure is very great—in large and important areas hogs have sold at low prices relative to the general market.

Only a small proportion of livestock producers have begun to think in terms of a general price structure.

The livestock industry is burdened with a great many unneeded markets and selling concerns.

There is urgent need for a sound program that will make livestock marketing more effective.

DISCUSSION BY I. W. ARTHUR

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Dr. Ashby's paper gives the impression of being prepared by a practical market operator or supervisor who is unacquainted with theoretical economics. As the discussion is developed it shows little or no indication of an impact with the discipline of formal economics. A second criticism is that, in several places, excerpts from conversations of undocumented source or authority are introduced presumably as evidence. This violates the customary practice of including in a technical manuscript only evidence for which a source may be noted and which another worker may verify.

My first approach was to make detailed criticisms and observations on the paper. But soon I found myself slipping into a repetition of the old "direct marketing" arguments which have been presented before this group many times in the past. Therefore, I decided to make only two brief observations on the "direct marketing" controversy and then present some suggestions as to how the topic under discussion might be approached to secure more useful and fruitful results. The comments on "direct marketing" are as follows:

Apparently considerable significance is attached to Prof. Duddy's statement that a packer could buy hogs in Des Moines cheaper than in Chicago, freight and other buying costs considered. There is some question as to the accuracy of Prof. Duddy's calculations and conclusions in this connection. Moreover, before undue concern is registered on this point it must be shown that the farmer loses more than he gains from this arrangement. Central Iowa farmers have long viewed the terminal market advocates as theorists in this controversy and now regard the theoretical economists as practical men. This is indicated from the percentage of hogs now going direct in this region. But this is neither a proof that the farmers are right nor is it a refutation of the statement that packers use direct trading to their own advantage in every possible way.

With regard to the author's suggestion that the local markets may be classified as "price-weakening" the following quotation is of interest:

"The relationship between the daily receipts of hogs and price is different at public markets than at interior markets. Receipts at public markets where hogs are consigned for sale constitute one factor which is taken into account in establishing the price, and the volume of receipts tends to affect price inversely. At interior markets the prices are announced early in the day and seldom change during the day. If the prices are relatively high, hogs will be attracted to the market on that day; whereas if they are relatively low, there is a tendency for hogs to be held back.

"It has been pointed out that receipts and prices were normally more or less different for the different days of the week. A study was made to ascertain how prices tended to vary from the normal price curve, for each day, as receipts varied above or below the normal-receipts curve for corresponding days, at the two types of markets. This showed that when receipts of hogs at Chicago were larger than normal the prices tended to be depressed, and when receipts were lighter than normal, the prices tended to increase. At interior markets in Iowa-southern Minnesota receipts greater than normal were associated with relatively high prices and receipts smaller than normal were associated with relatively low prices."[1]

Now let us return to the title of the main paper. The term "market" is popularly employed in so many alternative uses and meanings that some definition for present uses is needed. To restrict the term to a given point as is done here seems to cover up rather than emphasize the fact that for any agricultural product the actions of the whole body of producers and of consumers really constitutes the basis of the market. But even accepting the author's definition—"any point where livestock changes ownership" his classification of livestock markets into two types "public and local" seems especially *inadequate* and *inaccurate* as to the basis of division which is availability of price information.

A. Inadequacy.

Taking the hog trade in the American Corn Belt as an example, the following table outlines the important types of market outlets.

HOGS SOLD BY FARMERS* AT VARIOUS TYPES OF MARKETS IN 15 STATES, 1933

Type of market	1933	
	Number	Percentage
Public stockyards	281,978	44.8
Packing plants	87,871	14.0
Concentration yards and buying stations	39,035	6.2
Local buyers	137,391	21.8
Auctions	16,526	2.6
Cooperative shipping associations	66,372	10.6
Total	629,173	100.0

* Based on 9,881 reports for 1933. The number of hogs sold in each of these years averaged slightly more than 64 per farmer reporting.

[1] "The Direct Marketing of Hogs." *U.S.D.A. Misc. Pub. 222.* P. 182, March 1935.

In outlining types of markets the above classification is susceptible of subdivision. For example:

"There is a material difference among public markets in the character of the competition for the hogs received. At some markets there are 3 general types of buying for slaughter, at others only 2, and at some only 1. At markets where there are 3 types of buying there are buyers for some or all of the four national packers, some of whom have plants located at most important stockyards markets, buyers for local packers who have plants only at this market, and shipper-buyers, who buy hogs on order from packers located elsewhere. The Chicago market is typical of this kind of market. At markets where there are 2 types of buying there are buyers either for national packers or for independent packers, one or the other of which types—but not both—have plants located at these points, and shipper buyers. The South St. Paul market is of this type. The 1-buyer type markets are those where one packer (either national or local) takes the bulk of the supply and at which few, if any, hogs are bought by shipper buyers. These markets are relatively small and are located usually in deficit-production areas and mostly in states on either the Atlantic or the Pacific coast." *Ibid.*, p. 146.

B. Inaccuracy.

Let us return to the author's classification of market types into (1) those in which prices are readily and promptly available (the public markets) and (2) those for which prices are largely unavailable (the local markets). This classification does not accurately fit the existing situation. The local buyers and buying stations provide the only market at which a farmer may know, while his hogs are still home, the price which he may receive. Yet these markets are classed by the author in the group of "prices unavailable." Again, anyone may sit at the ringside in an auction and, if it is honorably conducted, know immediately the price at which every transaction takes place. Such is not the case in a so-called "public market." These examples serve to bring out defects in the basis of market classification which has been employed.

The fact that the government has at present an inadequate market news reporting service in certain important trading areas is deplorable. But does that fact in and of itself indicate that the matter of market news is a profound and adequate basis for delineating types of markets?

Price Structure

Let us look briefly at some of the elements of the price structure for a single commodity. We may take the following aspects:

1. a. *Price level* (general)
   b. *Price level* of the commodity
2. *Margins*—wholesale, retail, raw material, etc.
3. *Time* seasonal, cyclical, trend, etc.
4. *Location* of plants and markets
5. *Price spreads* between markets
6. *Competition* { Buying side / Selling side

For hogs there is a recognized group of economic studies on four of the above groups or elements in the price structure. Two have not as yet been treated in an adequate manner. The fourth factor, location, has not yet been seriously tackled. Probably this is because location theory itself is still

relatively weak. Today, let us look especially at the sixth factor, competition. And let us particularly examine the character of the competition on the buying side as an illustration of what might be done in this field.

Is there a contribution which economic theory can make towards answering the question is there monopoly or is there competition?

To present the views of monopoly that occur in economic theory it is necessary to comprehend the concepts. When this is done it soon becomes apparent that neither monopoly nor competition in a pure or unmodified-form appear freely in present day business in the United States.

Pure monopoly must be very rare in the world of business if it exists at all. The product which has no serviceable substitute is indeed difficult to discover. It seems clear that the trade in most manufactured products is on a basis somewhere between pure monopoly and pure competition. The terms "partial monopoly" and "monopolistic competition" have been coined by economists to designate the situations existing between the two poles that have been defined.

In Europe Cornout, Pareto, Edgeworth, Marshall, Wicksell, Auspitz, and Lieben, Antonelli and others had each made contributions before the World War to the analysis of monopoly and partial monopoly.[2] But by and large it may be said that up until the present decade American text books on principles of economics have developed most of the chapters resting on the assumption of perfect competition and few recognizing its absence. As a result the contribution which Economics has made to the solution of the problems of regulation of industrial monopoly in America has been relatively small.

More recently, however, American economists have been attempting to outline and describe the behavior which may be expected of monopolists and especially of partial monopolists, operating under monopolistic competition. The writings of Chamberlin, Burns, Scharfman and Eliot Jones and others are supplementing the work of Pigou, Mrs. Robinson and other European writers previously mentioned.

It is true that research with these tools has not proceeded far enough at present to be much specific help or a guide to legislative, legal or regulatory bodies. It may be that theoretical help of a very substantial nature will develop. It appears that there are some fields where the present theoretical tools can be applied for guidance of legislators, the courts and administrators of regulatory bodies.

When an attempt is made to apply the accepted geometric tools of monopoly analysis found in theoretical economics to a study of competitive conditions in the American meat packing industry, it is soon apparent that the analysis is blocked for two main reasons:

(1) The theory assumes that output will be controlled (expanded or contracted) to secure a desired price. Since the marketings and slaughter of hogs are very closely correlated and since livestock and meats are perishable and must soon be moved, packers' supply or output appears to be a datum. This is especially true when each firm maintains its percentage pur-

[2] Stigler, Geo., *An Introduction to the Theory of Imperfect Competition*, pp. 2 and 3. Mimeograph, Iowa State College, 1937.

chases of current receipts as has long been the custom of the big packers. This blocks the application of the geometry in existing economic theory to the problem at hand.

(2) Because of the multitude of packing house products a very intricate joint cost situation is confronted. As a result, many of the reported costs are at best an approximation and marginal costs seem practically impossible to determine. Since output is given, marginal revenues lose the significance frequently attached to them in monopoly control situations.

There remain, therefore, the matters of sharing the market, price discrimination for livestock or for meats on the bases of geography, use, or classes of customers. Also the matter of margins wide enough to take care of those firms which are inefficient in procurement, processing or distributing.

The foregoing comments are sufficient to illustrate some of the aspects of price structure for livestock which need to be explored and which were omitted from the main paper.

Let me suggest a peaceful and appropriate interment of the old "direct marketing" controversy as such. To continue a repetition of the well worn arguments of that debate promises to result mainly in a waste of our time and energies. Let us in the future broaden our horizons, sharpen our insight and see if we cannot approach these problems from some angle which gives a better prospect of advance than the old approaches have brought us. I suggest, as one avenue, the increased employment of economic theory as a promising guide to the interpretation of empirical and factual marketing information.

LIVESTOCK MARKETING METHODS AND LIVESTOCK PRICES

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One of the most important features of livestock marketing methods in this country has been their dynamic character. As in many other lines of economic activity, change in livestock marketing methods has been normal and stability has been abnormal.

Among the many changes have been the development of large public markets, expansion of rail transportation of livestock and livestock products, increased use of motor trucks, expansion in cooperative marketing, growth of direct marketing, development of auction markets, and only in the past few years the increased use of storage lockers for meat in many parts of the country.

Most persons will agree that a large number of the changes which have occurred have been a normal outgrowth of the development of the country and of changes in the livestock industry itself. The expansion in receipts of livestock at public markets in the latter part of the 19th and the early part of the 20th century, for example, represented a concentration of stock at large railroad terminals where packing plants were located. This was made necessary largely because the surplus area of livestock production expanded westward rapidly and because railroads for many years provided the chief means of transportation of both meats and livestock. The concentration and processing of large numbers of livestock at large market centers for shipment to the large consuming areas in the eastern part of the country probably was the most economical means of marketing for the period in question.

The growth of cooperative marketing of livestock represented an effort on the part of farmers to increase their returns. Cooperative marketing agencies initiated additional services in the marketing of livestock which have aided producers, and in many cases they also have been responsible for reductions in marketing costs. Certainly a change in marketing methods, such as this, which provides increased services and lower costs, is highly desirable.

Of all the changes in marketing methods which have occurred, perhaps none has evoked as much interest and comment as the growth in the direct marketing of livestock, especially hogs. At the meeting of this association 10 years ago a paper was read on the direct marketing of livestock.[1] Since that time the problem has been the subject of numerous research studies. Among these have been

[1] Miller, Paul L., "Direct Packer Buying of Livestock," JOURNAL OF FARM ECONOMICS, XI, 284–306, April 1929.

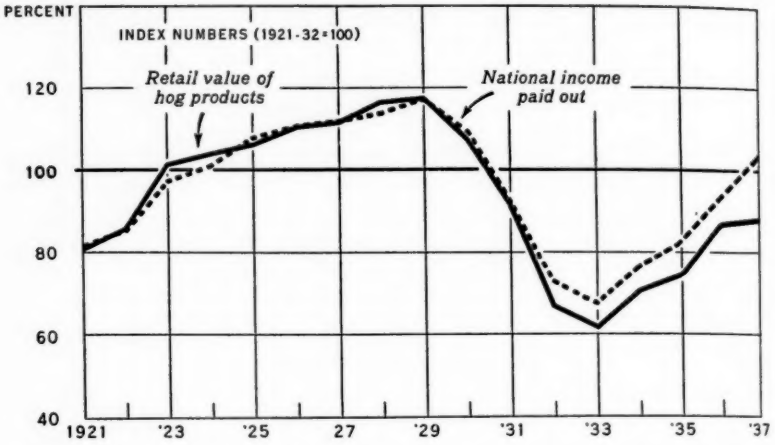

FIG. 1. RETAIL VALUE OF CONSUMPTION OF FEDERALLY INSPECTED HOG PRODUCTS AND NATIONAL INCOME, UNITED STATES, 1921 TO DATE.

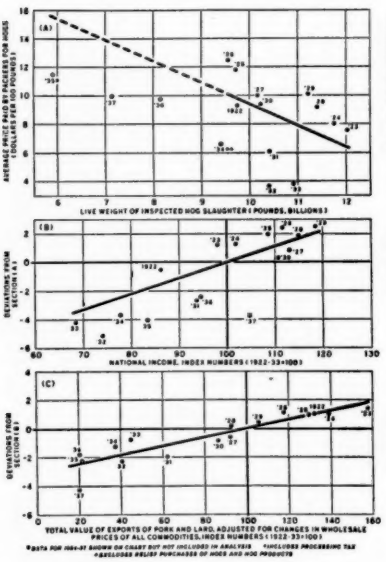
(A)
LIVE WEIGHT OF INSPECTED HOG SLAUGHTER (POUNDS, BILLIONS)
(B)
NATIONAL INCOME, INDEX NUMBERS (1922-33=100)
(C)
TOTAL VALUE OF EXPORTS OF PORK AND LARD, ADJUSTED FOR CHANGES IN WHOLESALE PRICES OF ALL COMMODITIES, INDEX NUMBERS (1922-33=100)

FIG. 2. RELATION OF HOG PRICES TO INSPECTED HOG SLAUGHTER, NATIONAL INCOME, AND EXPORT DEMAND FOR HOG PRODUCTS, UNITED STATES, 1922–33.

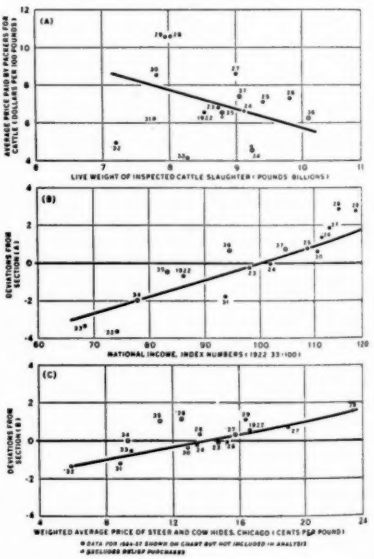
(A)
LIVE WEIGHT OF INSPECTED CATTLE SLAUGHTER (POUNDS, BILLIONS)
(B)
NATIONAL INCOME, INDEX NUMBERS (1922-33=100)
(C)
WEIGHTED AVERAGE PRICE OF STEER AND COW HIDES, CHICAGO (CENTS PER POUND)

FIG. 3. RELATION OF CATTLE PRICES TO INSPECTED CATTLE SLAUGHTER, NATIONAL INCOME, AND PRICE OF HIDES, 1922–33.

one by Professor Ashby, one by the Bureau of Agricultural Economics, and more recently one by the University of Chicago.[2] I shall not review the results of all three of these studies, but it might be mentioned that the conclusions of the three studies do not agree in important respects.

For a number of years the increase in direct marketing of livestock was confined largely to hogs, but in recent years there have been rather marked increases in direct sales to packers of cattle, calves and lambs. There also has been a considerable increase in the direct movement of feeder lambs and feeder cattle from the Western States to the Corn Belt during the last few years. Consequently the problem is now one relating to all livestock rather than to hogs alone.

From the standpoint of the farmer, probably the most important question raised by the increase in direct marketing is with respect to its effects on the general level of livestock prices. Because the increase in the proportion of hogs marketed direct has been greater than that for other species of livestock and for other reasons I shall first discuss briefly the relation or lack of relation between the growth of direct marketing of hogs and the changes in hog prices.

If it is assumed that the growth of direct marketing has resulted in producers getting less money for hogs than they would have received if direct marketing had not expanded, some one is getting the difference. Either consumers are paying less for hog products than they would have paid or middlemen's margins are greater than they otherwise would have been.

In the report of the BAE on the direct marketing of hogs it was shown that over a long period of years there had been a fairly close relation between changes in the estimated consumer expenditures for hog products and changes in incomes of consumers. It was also shown that this close relation had continued during the period of rapid expansion in direct marketing. This relationship between the retail value of the consumption of federally inspected pork and lard and changes in national income for the years 1921 through 1937 is indicated in figure 1.

As changes in consumer expenditures for hog products have been closely associated with changes in incomes of consumers, the chief factors affecting retail prices of hog products have been changes in incomes of consumers and changes in the total volume of hog prod-

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[2] Ashby, R. C., "Local Livestock Marketing in Relation to Corn Belt Hog Marketing," *Ill. Agric. Exp. Sta. Bul. No. 408;* Bureau of Agricultural Economics, "The Direct Marketing of Hogs," U.S. Department of Agriculture, *Misc. Pub. No. 222;* Duddy, E. A., and Revzan, David A., "Changing Relative Importance of the Central Livestock Market," *Journal of Business,* University of Chicago, July 1938.

ucts consumed. The growth of direct marketing, therefore, does not appear to have affected either the aggregate retail value of hog products consumed or the average retail price of hog products. Thus, consumers of hog products apparently have not benefited by the growth of direct marketing of hogs.

The factual evidence as to the effect of the growth of direct marketing of hogs upon middlemen's margins is not so clear as in the case of its lack of influence upon consumer expenditures for hog products. At the outset it should be recognized that data on retail prices of hog products are rather inadequate. On the basis of such data as are available, it appears that the spread between the farm price of hogs and the retail price of hog products widened substantially from the pre-war period to the post-war period. This also was true of most other farm products. Apparently this increase in the spread or margin between farm prices and retail prices generally was the result of a rather marked increase in the important cost items involved in processing and marketing charges including wages, rents and freight rates. The increase in these items obviously was not brought about by the growth of direct marketing.[3]

During the period when the direct marketing of hogs was expanding very rapidly, from about 1925 through 1932, the changes in the spread between the farm price of hogs and the retail prices of hog products were not associated with changes in the volume or proportion of hogs marketed direct. This provides some further indication that the increase in direct marketing of hogs did not cause an increase in the spread between the producer and consumer.

The total returns to producers for hogs largely represents the amount remaining after total charges for marketing, processing, and distribution of hogs and hog products have been deducted from the aggregate expenditures by consumers for hog products. The average price received by farmers for hogs in any month or year is the total amount received by producers divided by the total quantity of hogs sold. Consumer expenditures and retail prices of hog products were not affected by the growth of direct marketing, and it also appears that middlemen's charges have not been affected measurably by this expansion. If consumers have not paid more for hog products because of direct marketing and if middlemen's margins have not been increased by this growth, it seems reasonable to conclude that prices received by farmers have not been lowered as a result of it. Largely on the basis of this

[3] Bureau of Agricultural Economcis, "The Direct Marketing of Hogs," U.S. Department of Agriculture, *Misc. Pub. No. 222*, pp. 125–138.

evidence and reasoning it was concluded by the Bureau of Agricultural Economics in its report on "The Direct Marketing of Hogs" that the general level of hog prices had not been affected by the growth in direct marketing.

It is of interest to observe that several analyses of hog prices for a considerable period of years indicate that the chief factors affecting prices throughout the several periods used have been changes in slaughter supplies of hogs, changes in incomes of consumers and changes in the export demand for hog products. Among such analyses have been those by Wells, Thomsen, FitzGerald, Shepherd, and the writer of this paper.[4] The analyses by Wells and Thomsen cover both the pre-war period and the post-war period while the others are only for the post-war period.

The analysis for which I happen to be responsible is given in figure 2. It will be observed that the variations in hog prices during the years from 1922 through 1937 are fairly closely related to changes in slaughter supplies of hogs, changes in national income in the United States, and changes in the total value of exports of hog products, adjusted for changes in the general price level. It should be noted that the analysis is based entirely upon data for the years 1922 through 1933, and that the data for each year from 1934 through 1937 have simply been added to the chart without any changes in the regressions.

Except for the year 1937, changes in hog prices in the years added to the analysis appear to have been affected by the same factors which were important during the period from 1922 through 1933. I know of no logical explanation why the relationship for 1937 should be different from the 3 previous years, but it does differ as indicated by the position of the observations for the various years in the bottom section of figure 2.

Admittedly this analysis is subject to some criticism from both the standpoint of the method used and the factors included in the analysis. For each of the several series used in the analysis there is some degree of correlation between successive items, and this reduces the degrees of freedom in the analysis. On the other hand, the fact that in the case of three out of four years subsequent to those included in the analysis, the latter has continued to serve

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[4] Wells, O. V., "Farmers' Response to Price in Hog Production," *United States Department Agr. Tech. Bul. No. 359*, pp. 5–9. Thomsen, F. L., "The Direct Marketing Controversy," JOURNAL OF FARM ECONOMICS, Volume XVII, pp. 740–741, November 1935. FitzGerald D. A., "Livestock Under the AAA," *The Brookings Institution, Publication No. 65*, p. 250. Shepherd, Geoffrey and Wilcox, Walter W., "Stabilizing Corn Supplies by Storage," *Iowa Agr. Exp. Sta. Bul. No. 368*, pp. 336–338.

as an explanation of the price changes lends confidence to its validity.

National income paid out is only a rough measure of the changes in incomes of consumers, but no really adequate measure of consumer demand for hog products is available. It is also possible that the use of the changes in the deflated value of exports to measure changes in foreign demand over-simplifies the foreign demand problem. But data are not now available by which a more satisfactory measure of the foreign demand for hog products can be developed.

This analysis and other analyses of hog prices, however, do indicate what the principal factors affecting hog prices have been, during the past 15 years. They represent at least in some degree measures of the factors affecting hog prices which are not based entirely upon opinion or belief. From the standpoint of the direct marketing problem, it is significant that despite the marked increase in the volume of hogs marketed direct since about 1925, the relation of the changes in the several factors to changes in hog prices has not been affected. That is to say, the analysis indicates that the factors affecting hog prices in 1936, when 47 per cent of the hogs slaughtered under Federal inspection were bought direct, appear to have been essentially the same as in 1923 when only 24 per cent were purchased direct. This provides additional support for the conclusion that the growth of direct marketing has not affected the general level of hog prices.

For cattle and lambs it is not now possible to show what effects, if any, the growth of direct marketing has had upon middlemen's margins. By-products, such as hides and pelts, are much more important for cattle and lambs than for hogs, and this makes it difficult, if not impossible, to compare prices paid to producers for cattle and lambs with the retail value of all products derived from cattle and lambs. In addition such data on retail prices of beef as are available are for the better grades of beef, and because of wide range in quality and finish of slaughter cattle and beef the spread between the prices of the better grades of cattle and beef can hardly be used as representative of all grades. Steps are now being taken to secure more adequate data on cattle and beef, and the problem at hand emphasizes the need for such data.

An analysis of the factors affecting cattle prices similar to that for hogs is shown in figure 3. The principal factors affecting the average price of cattle slaughtered under Federal inspection during the years 1922–33, according to this analysis, were changes in the volume of slaughter, changes in national income and changes in prices of hides.

As in the case of hogs, data for the years from 1934 through 1937 were added to the chart but were not included in the correlation analysis. In three of these four years the average price of cattle was somewhat higher than the analysis for earlier years would have indicated. Thus it appears that for recent years, at least, and perhaps for the entire period beginning with 1922, the analysis may be inadequate. One reason for the failure of the relation which prevailed from 1922 through 1933 to be adequate for the years since 1933 may be the unusually short supply of hogs marketed in the past four years.

In any event the analysis does not indicate that the level of cattle prices has been depressed by the growth of direct marketing of cattle. In fact in recent years, when there has been a considerable expansion in the number of cattle marketed direct, the average price of cattle has been higher than indicated by the analysis on the basis of the relationship prevailing from 1922 through 1933. But the short supplies of hogs appear to be a more logical explanation for this than the growth of direct marketing. My own opinion is that the direct analysis of prices of hogs or cattle, such as shown in figures 2 and 3, is not a satisfactory approach to a study of the factors affecting the prices of livestock.

A much better means would be an analysis of the factors affecting the prices of meat and other products derived from livestock in conjunction with an analysis of factors affecting the spread between prices of livestock and prices of the products derived therefrom.

Statistical measures of the factors affecting livestock prices all indicate that the general level of prices of hogs and cattle has not been affected by the growth of direct marketing. By the general level of prices, I mean the monthly or yearly average prices of all hogs and cattle sold for slaughter. It is possible, of course, that prices for short periods and prices to individual producers at times have been affected either adversely or favorably by direct marketing. Such effects, however, are difficult to measure and probably are unimportant for the livestock industry as a whole.

I have interpreted the term livestock marketing methods to mean the manner in which livestock is sold either by the farmer or his agent or by a livestock trader or dealer. In this sense, it is probable that the changes in marketing methods that have occurred in the past 30 years either have tended to reduce the spread between producer and consumer or have not affected it materially. Most studies of marketing livestock by truck indicate somewhat cheaper marketing costs in one form or another. The same probably can be said for the growth of cooperative livestock marketing.

And I would hazard the guess that the greater use of storage lockers may also accomplish this result.

Notwithstanding any tendency toward reduction in the spread between the producer and the consumer that has occurred as a result of changes in livestock marketing methods, this spread is still large. Lowering of livestock marketing costs affects only the spread between producers and packers, which is a relatively small part of the total spread between producers and consumers.

A recent study of margins in the livestock and meat industry shows that the 1930–34 average price received by producers for livestock was $5.18 per 100 pounds, while the average retail value of the meat obtained from 100 pounds of livestock in this period was $11.20.[5] In this period, the spread between the price of livestock and the retail value of meat, amounting to about $6.00, was greater than the price of livestock. Of this total of $6.00, the difference between the price received by producers and the price paid by packers was only about 60 cents. In the past 2 or 3 years livestock prices have been considerably higher than the 1930–34 average, and the margin between the price of livestock and the retail price of meat probably has not been much greater than the average margin for the 1930–34 period. Nevertheless, the spread between meat and livestock prices is still large in relation to prices which farmers receive for livestock.

Whether this spread between the producer and consumer of livestock and meats can be substantially reduced is, of course, a debatable question. I believe, however, it is a problem which should challenge the attention of marketing research workers and marketing agencies as well as producers and processors. A decrease in the spread would certainly mean greater returns to producers and in the long run it probably would benefit consumers.

One means frequently suggested for reducing the spread between producer and consumer is greater decentralization of the processing industry in so far as its location is concerned. The growth of direct marketing is a step in this direction as is the increase in local slaughter resulting from the expansion in the use of storage lockers.

Other possibilities of reducing the spread need to be examined carefully. It is possible that, for some meat items, packaging and processing has gone too far. For example, there may be still consumers who could buy strip bacon but who cannot afford to buy sliced bacon. Likewise there may be consumers who would prefer to buy lard in the bulk rather than in cartons.

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[5] Tobin, Bernard F. and Howard C. Greer, *What Becomes of the Consumer's Meat Dollar*, University of Chicago, p. 18

On the other hand, in the case of other meat products, it is possible that the degree of preparation of the product by processors for consumers might be increased. If meat were boned and surplus fat not used by consumers were removed at the point of slaughter, substantial savings in transportation costs and handling charges probably would result. For beef and lamb it might be possible to effect some savings if more of the meat were sold by packers in the form of wholesale and perhaps retail cuts. By this change it would be possible to an increasing extent to supply markets with the kind of meat in greatest demand in that market without the necessity of also shipping into such markets cuts not in demand.

I mention these possibilities for reducing the spread largely to indicate some factors which should be examined. There are no doubt other possibilities, some of which may be more important than the ones I have mentioned.

In beginning this paper I stated that marked changes in methods of livestock marketing had occurred over a period of years. The changes in methods of processing and distribution probably have been even more marked. It is a reasonably safe prediction that in coming years further marked changes will occur in methods of livestock marketing and in methods or processing and distribution as well. From the standpoint of the livestock producer and the consumer of meats, it is important that these changes be in the direction of a reduced spread between producer and consumer. It is to this end that efforts of marketing research workers and others interested in marketing problems should be directed.

LEGAL RESPONSIBILITIES OF FARM MANAGERS AND CLIENTS

TRUE D. MORSE
Doane Agricultural Service

Few realize that they walk constantly in the shadow of legal liability. Acts and happenings entirely unplanned and unpredictable may at any moment convert that shadow into a black reality. People with the best of intentions find themselves in court and often emerge subject to judgments which may cripple or wreck their financial programs. These possibilities multiply rapidly as people acquire property and enter into agreements and contracts that create such relationships as those of manager and client.

Principals and Agents

The relationship created when a landowner employs a farm manager is that of principal (the owner) and agent (the farm manager). With the creation of this relationship there immediately comes to rest upon the manager and his client that great section of the law which is frequently referred to by the single term "agency."

An agent is a person authorized to transact business for another. Within the scope of his authority he may bind his principal, in this case the landowner or client. The authority given the agent can and should be defined in the agreement between the manager and the client. This, however, is a protection only as between the two and any others who know what the agreement includes.

Most people can properly assume that the authority of the manager includes all that normally given an agent who undertakes to manage real estate. The law thus looks to the "implied authority" unless it can be shown that third parties had actual knowledge of the scope of authority or were obligated to determine such. Notice to all third parties of limitations in management agreements is usually an impossibility. Thus any limitations of authority in the agreements between managers and clients should be counted as effective only between the parties to the agreement. As to the rest of the world, it is safest to assume that the principal and agent are both fully responsible for all that the relationship implies as applied to the management of the type of farm involved.

A principal is held liable not only for acts of his agent that he has expressly or impliedly authorized, but also for acts which his authorization has made possible. Even though fraudulent acts may not have been authorized, if the agent has been put in the princi-

pal's place so as to be able to commit fraud, the principal must answer for any fraudulent conduct.

Even when a manager may be proceeding with the best of intentions, he may greatly involve his client. For instance, the prosecution by a manager of a tenant for the supposed theft of grain resulting in non-conviction was the basis for a $30,000 suit against the landowner for damage to the tenant's good name and reputation.

Managers should be aware of the fact that they frequently make themselves liable along with their clients. Injured parties or persons having a complaint can at times press their claims against both the agent and the principal. It is sometimes more convenient to collect from the manager than from the landowner, especially when the latter lives out of the state or is otherwise less accessible.

A manager's obligations to his client are many and of far-reaching significance. He is responsible for losses that result from disobeying his client, even if he acts in good faith and exercises his best judgment. A manager must be loyal to his client's interests, he must not occupy a position, represent other parties, or engage in any transactions that will even tend to lead to a betrayal of his trust.

An agent can be held to strict accounting, and if he commingles the money and property of his principal with his own, he must pay over all that he cannot clearly prove to be his. An agent must give his principal all material facts coming to his knowledge that relate to the subject matter of the agency. An agent cannot delegate his duties to another without the express or implied consent of the principal unless such is a well established business custom.

Any agent who is paid for his services is bound to possess and use such care, skill, and diligence as are exercised by careful and prudent persons engaged in such undertakings under similar circumstances. A farm manager authorized to take out and pay for insurance must inquire as to the solvency of the company, see that the amount is adequate, and that the policy is not allowed to lapse because of non-payment of premiums or other neglect. If neglect of duty can be clearly established, a manager may be liable for the value of buildings lost by fire or tornado.

The great obligations assumed by a manager in the discharge of his duties involve legal liability which responsible men and organizations cannot afford to assume unless they are adequately paid for their services. When landowners go shopping for cheap management, they should realize the extent of the trouble they are inviting when they employ irresponsible parties who treat farm supervision as a sideline and who are not trained or equipped to render the required services and safeguard the ownership.

Managers and their clients should constantly observe the following precautionary measures:

(a) Managers should deal only with responsible clients.
(b) Clients should select with extreme care, the managers who are to represent them as agents.
(c) The agreement between manager and client should be in writing and in addition to other terms should define the scope of authority.
(d) Managers should be certain that they are known to the public and to those with whom they deal, only as agents of their clients. They thus constantly give notice of their true relationships to the property and the transactions in which they engage.

Partnerships

Participation in the profits of an enterprise, as profits, usually creates a partnership. When a partnership is created, each of the partners becomes fully liable for losses and any acts of the other partner that can be implied to the partnership and that come within the scope of such relationships. Such responsibilities usually cannot be avoided by secret, silent, or dormant partners.

It is relatively easy to drift into working arrangements either as between managers and clients, owners and tenants, managers and tenants, or even all three parties, which, although never intended as partnerships, are held by law to be such. The law looks not only to the agreements but to the relationship and transactions as known by the public. Ostensible partners under the law are actual partners.

The well known and much used fifty-fifty livestock lease in most states would probably be held to be a partnership. If a manager is going to select a partner for his client for such a business, it is imperative that the moral character and financial responsibility of the tenant be seriously considered. The landowner-client should definitely understand that he is being made a partner of the tenant and should, in writing, approve the negotiation of such leases by the manager.

When the test comes, it is too late to remedy the situation. Managers and their clients should keep their positions clearly defined and should use extreme care in dealing with each other, their tenants, and the public, to see that nothing is done that can be used as evidence of a partnership.

Master and Servant

On properties operated without the use of tenants, the labor employed usually falls within the legal classification of servants. This also applies to labor employed by landowners on tenant-

operated farms. Even though a farm is rented, labor is frequently employed to make repairs, construct buildings and fences, put in tile, or help harvest and market grain.

Rotten ladders or scaffolds, defective machinery, dangerous animals and workstock, and many other hazardous situations encountered daily on farms can cause injury for which owners, and in some cases even managers, can be held responsible.

Negligence, carelessness, and even stupidity by an employee are not sufficient to remove acts from among those making the master liable. Risks of injury to third parties are placed by law on the employer. He must instruct inexperienced workmen and provide competent fellow laborers. Safe machinery and appliances and regular inspection and repair of implements are definitely required of employers.

Workmen's Compensation Laws limit the amount that can be recovered, but agricultural workers do not always come under these acts. This is particularly true when the number of employees is small.

Some of the safeguards against liability are:

1. Compliance with the Workmen's Compensation Acts.
2. Protection through carrying liability insurance and requiring contractors to carry such insurance.
3. Contracting as much work as practical so as to throw all major responsibility onto the one doing the work. Independent contractors ordinarily do not have recourse on employers for injuries to themselves and to their employees. Work involving danger, such as dynamiting, should be let to parties who are clearly independent contractors.

Incidents of Ownership and Possession

The ownership and possession of real estate carries with it definite liability for injuries to persons while on the property. Even though people may come onto the premises without right, as trespassers, and become injured, the landowner may be held liable. In this regard, the law goes much further in the protection of children than adults.

The obligation to keep premises safe is much more definite when persons come onto the land with the consent of the possessor. Even greater is the obligation to protect business guests and "invitees." The duty owed to persons coming on the premises for the mutual benefit of both parties includes much more protection against hazards than is due trespassers and licensees. Quarries, open pits, and wells left unprotected are good illustrations of dangerous instrumentalities which may result in damage cases.

In one case, the court held the lessor liable to the tenant for the drowning of the tenant's child in a cistern. Even though the tenant had knowledge of the unprotected cistern and thus had negligently contributed to the death, the lessor was held responsible because he had promised to remedy the condition. The lessor is under no obligation continuously to reinspect premises after a tenant takes possession, but if he or his manager discovers or suspects danger and fails to warn the tenant, he will be held liable for resulting injuries.

A landowner cannot escape liability for injuries caused by a nuisance on his land by leasing the land. If the tenant permits the nuisance to continue, any third party who is injured may recover damages from either the tenant or landlord or both.

Tenants, although they are constantly using buildings that are in dangerous condition, may have good damage cases growing out of injuries resulting from such defective structures.

Landlords are especially charged with the responsibility for injuries resulting from dangerous conditions of which they have knowledge. It therefore may prove costly to disregard requests for repairs of rotten banisters and floors or insecure barns or parts of buildings that may give way and kill or injure people or livestock.

Landlord and Tenant

The landlord and tenant obligations should be covered largely by properly drawn, written contracts. Obviously not all situations can be encompassed by the terms of the lease; in fact, some of those already referred to cannot be validly included in the contracts as they would be held to be against public policy.

Much value is coming out of the large amount of landlord-tenant discussion that has been going on throughout the country. This has been stimulated by the real and fancied injustices wrought upon tenants. One fact should not be overlooked—the landlord is usually financially responsible for his part of the contract, while the tenant often has so little property that he is judgment proof. There is, therefore, good cause to look carefully to keeping the landowner fully protected legally.

Managers have the responsibility of being certain that their clients have the protection of lien laws to insure the payment of rents. Some states like Iowa give the landlord a lien on the total crop and all personal property of the tenant. In some other states such a lien can be obtained only by special notes and chattel mortgages. Some states require only filing of such instruments. In other states leases and chattel mortgages must be recorded if full protection is to be had. All of this merely emphasizes the fact that

managers must be fully conversant with the statutory laws of the states in which they operate if they are to fully discharge their responsibilities to their clients.

The landowner and his manager should see that the terms of the lease are faithfully performed. Failure to do this may enable the tenant to successfully maintain one of the following actions:

(a) In tort to recover damages for the intentional or negligent wrongs done him by the landlord, or
(b) For breach of contract to recover only the damages suffered as a result of the breach of the contract.

Need for Legal Guidance

Replies from some fifteen leading farm managers scattered throughout the United States and Canada show that rules of business conduct are needed for farm owners and farm managers. These should be developed by states or provinces and should set out in a clear, concise manner, the effect of state and national laws dealing with such items as:

1. Fences, ownership and maintenance
2. Drainage, such as rights to tile onto or through neighboring land, use of open ditches, water diversion
3. Rights of possession as when changing tenants and selling a farm
4. Easements and their legal effect
5. Rights of ingress and egress to property
6. Protection against waste—such as removal of timber and gravel
7. Workmen's Compensation Laws—as applied to farm operation
8. Ownership of temporary and attached improvements made by tenants, such as small buildings, fences, wiring and fixtures for electricity
9. Obligation to replace buildings destroyed by fire on leased farms
10. How and when to put contracts into writing and methods of enforcing same

How to Avoid Legal Troubles

Some safeguards against these legal hazards have been interposed throughout this discussion. These and others summarize as follows:

1. *Clients* should deal only with *responsible* and competent managers.
2. *Managers* should accept work from a selected clientele.
3. Agency relationship should be kept clear and well defined. Managers should not confuse in any way, personal and client business.
4. Confusing or complicated relationships should be avoided. Standard practices that have had the test of law should be closely adhered to.
5. Contracts should be in writing.

(a) Carefully drawn legal forms should be used for leases and other standardized contracts.
(b) Attorneys should be engaged to draw up special contracts.

6. If trouble of any kind arises, handle promptly. Get all of the facts; determine who are the witnesses; take steps to stop further loss; and in case of injury see that complete medical care is given.
7. Insurance can be had against some liabilities but is often a costly or poor substitute for careful, competent management.
8. When in doubt, consult a capable, *practical* lawyer.

A big subject like this can be sketched only briefly in the short time available. It is easy to build up a case that would scare farm managers out of the management business and owners out of the desire to own real estate. These are the negative aspects of land ownership and management. They are more than offset by the many pleasures and economic benefits of farm ownership.

ECONOMIC RESEARCH NEEDED BY PROFESSIONAL FARM MANAGERS

ERSEL WALLEY
Walley Agricultural Service

The testimony of professional farm managers and college men in close touch with the problems of these managers, indicates that economic research is needed in many fields. Admittedly, many of the problems suggested invade fields of agricultural engineering, agronomy, and animal husbandry and there is a variance of opinion as to the nature of studies which may be considered as truly economic. For our present purposes let us discuss studies needed by professional farm managers and assume that an economic aspect can be ascribed to any worthwhile one.

Professional farm managers are often required to aid and advise investors in purchasing farms and many difficult problems arise in this selection. Today we have many farm management studies which make it comparatively easy to identify and discard units which are definitely uneconomic. Beyond that point, however, the manager must depend upon his own analysis of the possibilities of the property in question. A study of larger than average farms is needed to show the possible correlations between the size of farms, the productivity rating of the land and the net income. Quite often the investor is interested in knowing how much mortgage debt land will carry, a problem upon which there has been very little research work. Other clients are interested in the per acre value which can ordinarily be supported by various methods of land utilization and types of operation.

The improvements on farms taken over for management are usually in need of rehabilitation. Quite often an extensive new building program is suggested. Farm owners, especially new ones, are often inclined to overbuild. Farm managers themselves like to see everything about the farm in shipshape. Research is needed, however, to determine whether or not many of the things customarily done are economically sound. Paint on farm buildings improves their appearance, but does it pay? The installation of electric service is appreciated by the farm family, but does it reflect increased net income to the tenant and the farm owner? Expensive permanent fences are convenient, but do they provide enclosure as cheaply per acre per year as the movable types? The professional farm manager usually plans and carries out a soil building program designed to increase yields. Is the cost of the program justified by the value of the increased production? Does it really pay to drain land areas where slight water damage is experienced? How much

can be spent per animal unit to house and accommodate various kinds of livestock and still permit profitable operation? Research can obtain sustained data to aid in answering these and similar questions.

In outlining a method of operating a farm, the professional manager has as his guide conclusions reached from the study of the economic aspects of practically every farm practice and procedure. Too often, however, these studies are based upon types of operation now out of date. The almost general use of tractor power and of farm machines made possible thereby has opened many new fields of needed economic research. Changed and improved practices have also added to the need for further studies. For example, poultry projects involving the keeping of up to 1000 laying hens are now rather frequent on farms under professional management but few studies have been made which aid one in setting up seasonal or even annual labor requirements per unit in such operations.

A large majority of professionally managed farms are operated by tenants although there has been little study made to show that tenant operation is actually better from economic or sociological standpoints than hired labor operation. Such a study would be valuable. Farm tenancy itself has been the subject of much research particularly as to the percentage of all farms operated by tenants and the length of tenure. Much time also has been given to the study of farm leases with the avowed purpose of correcting evils in our tenant farming system and lengthening the term of tenure.

Professional farm managers are interested in a study of underlying factors and causes. Fancy phrases in a lease do not insure a long time land tenure. If both the landlord and tenant are making money, the length of tenure takes care of itself and if they do not make money, the covenants of the lease will not keep them together continuously. For this reason, we believe that it would be helpful if more research be given to working out formulas upon which to base fair rental terms, determining and recognizing the rental value of farm homes and privileges extended to and enjoyed by tenants, studying methods of financing tenants for needed working capital, comparing the results of intelligent grain share leasing and the fifty-fifty livestock method of renting, and developing rental methods which insure the continuity of livestock breeding programs on a farm regardless of change of tenants.

Many of the studies of tenant farming have been sociological rather than economic. In general these have been rather superficial. Are we certain that the increase in farm tenancy has not been partially due to the fact that many farmers feel they can maintain a better standard of living on a profitable economic unit

as a tenant than they could as an owner-operator on a smaller and possibly an uneconomic unit. There is no reason why the absentee owner of a good farm in combination with a successful tenant can not together make an unusual economic and sociological contribution to the community. A thorough study of successful tenanted farms might become the basis of a practical and intelligent approach to the improvement of our whole tenancy system.

In the supervision of farm operations, many managers report the need of yardsticks of livestock efficiency and ready indices of success and efficiency in all farm operations based upon economic studies. A study of possible methods of evaluating increased or diminished soil fertility so it can be shown on the operating statement, would be valuable. A summary of farm record results teach us that a certain volume of business must be attained before satisfactory net returns are experienced. How far can the size of the operation and volume of business be increased before diminishing returns set in? Farm managers would appreciate any research which would sustain the decisions they have to make quite often on this question.

Most farm accounting methods have been designed for owner-operated units. The professional farm manager would welcome a survey of accounting methods particularly adapted for use in connection with tenant operations. Such a study might go as far as to develop rather uniform methods of accounting and making reports to farm owners.

Among other problems upon which Professional Farm Managers feel that research is needed are these: What rates of annual depreciation and maintenance on various types of buildings and equipment should be used in farm accounting? What methods of handling second grade farms belonging to non-resident owners have been most successful? What have been the cost and results of the various methods of rehabilitating impoverished farms and farmers?

More important to the professional farm managers than any of the numerous problems mentioned, however, is the need of making the results of economic research already accomplished more accessible and usable. Clients demand that the Professional Farm Manager be quick with his answers and a basis for sound answers must be immediately at hand. There is an evident need of greater cooperation between the various experiment stations not only in choosing subjects for research, but also in listing and indexing results already secured. The professional farm manager is a prodigious user of economic studies and the more accessible and usable the greater will be the practical value of all types of economic research.

BASE PERIODS FOR FARM PRICE STUDIES

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Bureau of Agricultural Economics

CONSIDERATIONS INVOLVED IN THE SELECTION OF A BASE PERIOD

As a starting point in this discussion of base periods, I offer the following proposition: that the best base period is the nearest period or point of fairly stable prices, at a level about midway between the extremes of long-time price swings.

First let us consider purposes for which price index numbers are constructed. Index numbers of prices of farm products are constructed—

(1) To measure changes in the price level of farm products generally;

(2) To provide indications or measures of the relationship of the prices of one product or a group of products to the prices of all farm products;

(3) To indicate the relationship of prices farmers pay for commodities and services they employ, to the prices of farm products;

(4) To indicate the relationship of prices of individual items and groups of items to the general price level;

(5) To indicate "parity" of prices of commodities or groups of commodities in relation to others, on a prescribed base.

For all of these purposes the nearest suitable base is desirable because of the fact that new items appear from time to time, data are improved as time passes, and the character and quality of commodities and services change, so that a base loses some value as it recedes into the past. Furthermore, the index numbers are likely to be used more intelligently if the base period lies within the memory of many of the users so that they have in mind something of the conditions prevailing in that period. On the other hand, the base should be far enough in the past that it can be judged in perspective as to its representativeness and relation to the present and immediate future.

Although the prices of many commodities are never stable for a period of any length, some degree of stability is desirable in a base period. By "stability" I do not mean necessarily that the course of prices shall be level—that is, shall be marked by a perfect "plateau"; but that prices generally are moving about parallel. The significant point to consider is that raw material prices, including farm products, are very sensitive to changes in economic conditions, while the prices of many factory products and service charges are insensitive. If this were not true, and the prices of raw materials and manufactured products moved in a parallel

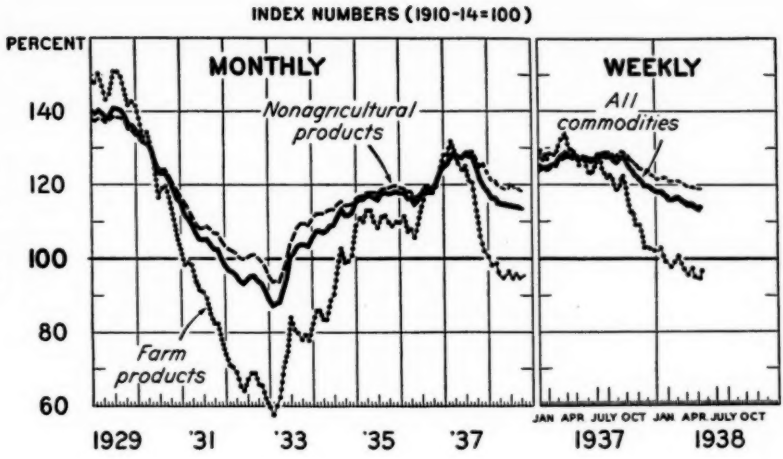

FIG. 1. WHOLESALE PRICES OF FARM AND NONAGRICULTURAL PRODUCTS AND OF ALL COMMODITIES, 1929 TO DATE.

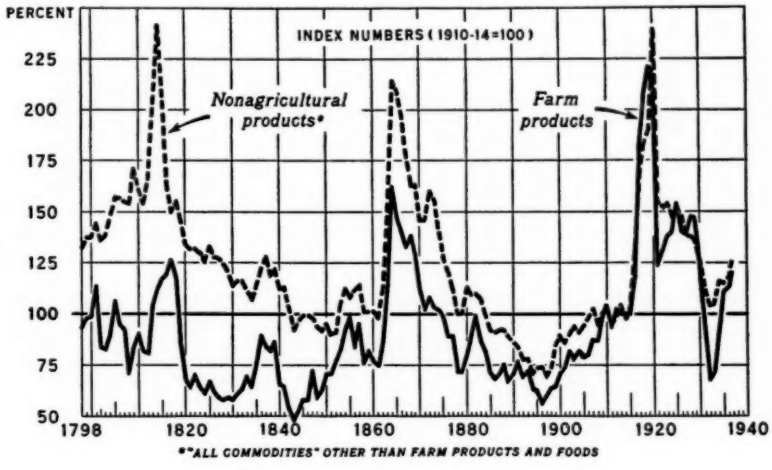

FIG. 2. WHOLESALE PRICES OF FARM AND NONAGRICULTURAL PRODUCTS, 1798–1937.

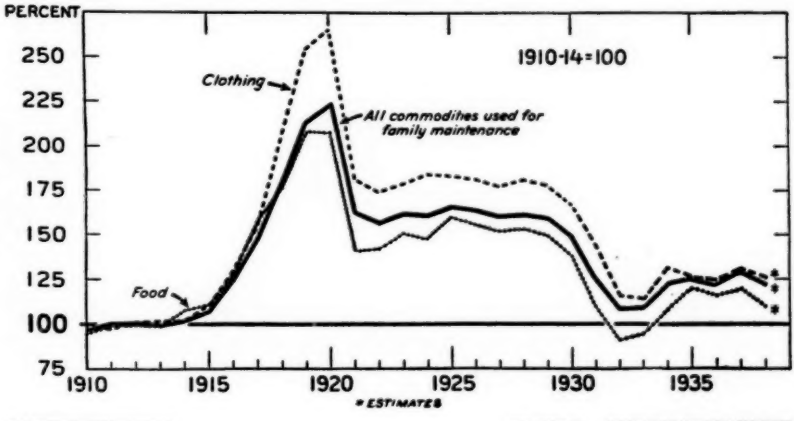

FIG. 3. PRICES PAID BY FARMERS FOR FOOD, CLOTHING, AND FAMILY MAINTENANCE, 1910-38.

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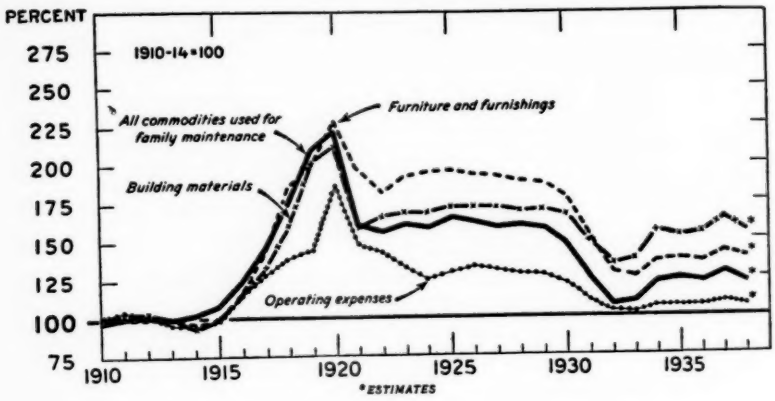

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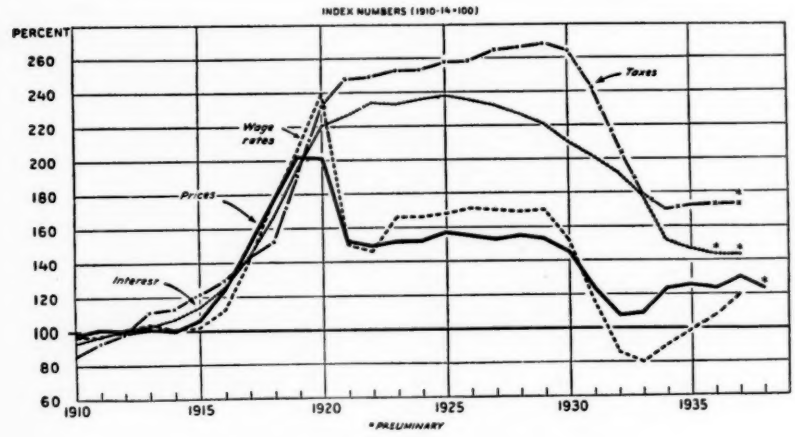

FIG. 5. PRIC
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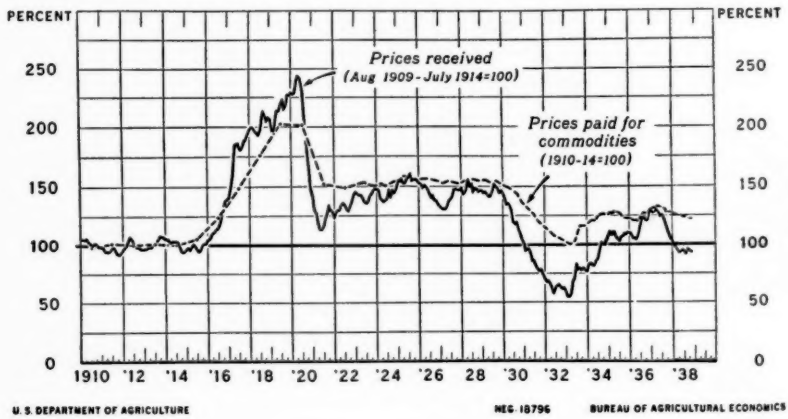

FIG. 6. PRIC
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1910 TO DATE.

manner, there would be less concern about the timing of the base period. We know that when prices are falling rapidly, abnormal relationships develop; and similarly, when prices are rising rapidly. By "abnormal" here I simply mean the development of relationships which are unstable as against relationships to which there is a tendency to return in a period when economic conditions generally are fairly stable for a period of some length. A base period taken when prices are sharply rising or falling is likely to be followed by a showing of great dispersion in individual and group price series, with a suggestion of continuously abnormal conditions. I would define a period of stability as one in which production generally and consumption are in a fair degree of balance, with prices generally neither falling nor rising rapidly.

The level of the base period in relation to long-time swings is important on account of both technical considerations and the implications associated with treating the base period as 100 in a series of index numbers. If a high point in the long-time swings is taken as a base, the index numbers will be mostly fractions of 100 and tend to convey the impression that the prices are nearly always too low. If, on the other hand, the base period is taken at the bottom of a long-time swing, the prices will seem generally to be too high. The graphic and mathematical representations of the swings in prices are also better when the base is taken near the mid-point of the long-time swings. An economic justification lies in the assumption created by our experience in the past hundred years, that there is a central tendency in the general price level with long-time cycles, so that when prices are relatively very high or very low, they are likely to swing back in the course of time toward the central tendency.

Some consideration should be given to the length of the base period. In dealing with the general price level for all commodities, it may be fairly satisfactory to use one year as a base; but in breaking down an all-commodity series into sub-groups and showing individual items, such a short base period is not satisfactory. Base periods should be long enough to smooth out the accidental and short-time fluctuations. In other words, they should be long enough to establish an average or "normal" relationship among the several commodities represented in the index. Since a number of agricultural commodities have short-time cyclical movements, a base period should as a rule be long enough to include a whole cycle, or at least a sufficient segment of the cycle to establish approximately the average for the cycle. The shortest period that might reasonably be considered for agriculture is three years,—approximately the length of the hog cycle; but a longer period is desirable. A 5-

year period is better than a 3-year period. A complete major business cycle might be considered an ideal base period. A difficulty arises, however, from extending the length of the period, in that the long period may include years with a high degree of instability that the average relations among the items are distorted.

Another point to be considered in choosing a base period is the availability of data for weighting items in the index. The importance of the representativeness of the weights is not sufficient to outweigh other considerations in determining a base period, but this deserves some consideration. In so far as it is feasible, the weights should be taken from data available in the period chosen for a price base.

THE CASE FOR THE 1910–14 BASE

F. A. Pearson and K. R. Bennett
Cornell University

The increasing use of index numbers by farmers, business men, legislators, and government officials has stimulated research workers in this field to discuss at various times methods of weighting, methods of constructing index numbers, type of commodities to be included in the index, and base periods. Experience has taught us that the methods of calculating and weighting make little difference in the final result, that the type of commodities included causes the greatest variations, and that normally the choice of a base period is relatively unimportant. During periods of violently fluctuating prices, the commodities to be included is still the major problem, method is unimportant, and the choice of a base period becomes increasingly important.

Disadvantages of 1910–1914

One of the important requisites of a suitable base is its proximity to the period studied, which is usually the present. Comparison with the immediate past is usually more important than comparison with the more remote past. Memory is short, and the human mind naturally makes comparisons with events in the immediate past rather than with events further removed. A disadvantage of 1910–1914 as a base period is that it is a quarter of a century away from 1938. A large proportion of today's adults had practically no experience from 1910 to 1914, and the remainder remember little of that period. Furthermore, recent events are so vivid in our memories that they blot out the more remote events of 1910 to 1914.

Certain technical difficulties in the construction of index numbers arise when the base period is removed too far from the present. Often it is impossible to carry all the series of prices back. Data for a remote base period may be inadequate or even unavailable, and data are certainly not available, if the item is a new product or new grade of an old product.

A distant base period complicates the weighting problem when there is a pronounced secular trend in the price or importance of one commodity relative to the others. Consequently, the actual or effective weight of the item departs from the assigned weight as the length of time increases. In either case, if a constant relationship is desired, an assigned variable weight should be used.

Advantages of 1910–1914

One of the requisites of a suitable base is an equilibrium in the whole price structure. Whenever prices rise or fall, some prices change more rapidly and by a greater amount than others. A disequilibrium in the price structure is then said to exist. Such disequilibrium is greatest when prices are changing rapidly.

Index numbers have a variety of uses; one is to compare at any one time prices of various individual commodities, or groups of commodities, or the respective levels of various types of prices, costs, rents, wages, or the like. When making this use of index numbers, it is usually assumed that the relationships between various prices in the base period are "normal." If one price is high or low in the base period with respect to "normal," the subsequent index numbers for that price will be lower or higher than the indexes for all prices, when in reality this price may be in its normal relationship to all prices. In order to avoid erroneous conclusions, a base period should be chosen in which the various types of prices are most nearly in their normal relationship to each other.

In the weighting of index numbers, weights are assigned to the individual components of the index and these weights may be equal or unequal. Choosing an "abnormal" base period affects the effective weights in the subsequent years. The actual weight given a commodity is determined for any one time by the relative size of the product of the weight and the price. This actual or effective weight is not constant, but fluctuates with variations in the price of the commodity relative to the prices of all commodities. Over a long period of time, the actual weight should average about the same as the given or intended weight. If the price of a commodity is abnormally low during the base period, the price relatives for that commodity in other years will be higher than the relatives for other commodities. Since most indexes are calculated with fixed quantity weights, such a commodity will receive more weight than was intended. Conversely, any item higher than normal in price during the base period will receive less weight than intended.

It has been emphasized that in the base period price relationships should be normal. Those normal relationships are most apt to be found in periods when the price structure is nearly in equilibrium. Exact equilibrium in the price structure rarely, if ever, exists, but there have been periods when the amount of disequilibrium was seemingly at a minimum. From the early nineties to the World War, prices rose rather steadily at the average rate of two per cent per year. This change was so slow and in the same general direction for such a long period that the price structure was approximately

in equilibrium during the last five years, 1910 to 1914. Since 1914, prices have changed their direction and rate of movement so often that periods of minimum disequilibrium have been few, and those, very short.

Some persons have pointed out that one disadvantage of using 1910–14 as a base for farm price studies is that, during this period, prices of agricultural commodities were abnormally high relative to other prices. This minor criticism ignores the fact that for more than a century prior to the World War farm prices in the United States had steadily risen relative to prices of all commodities. The violent fluctuations in commodity prices during the last twenty-five years have temporarily disturbed this normal upward trend. Higher-than-average relative prices are not necessarily higher-than-normal. There was nothing extraordinary about the 1910–14 period that would make for high relative prices for agricultural commodities, with the possible exception of a stable price structure. If the favorable conditions accompanying a stable price structure were the only causes of these favorable agricultural prices, might there not be ample reason to accept 1910–14 as a standard?

In the base period, monetary conditions should be relatively stable if the price structure is to approximate equilibrium. Changes in the monetary unit cause variations in currency prices; and when prices change, the prices of some commodities change more rapidly and to a greater extent than prices of other commodities. Comparisons between prices in various countries are difficult and often lead to erroneous conclusions, if the changes in the monetary unit were made during the base period. An advantage of the 1910–14 period is its relative freedom from monetary changes. No post-war period of this length can boast of this.

The length of the base period is important, especially in the case of agricultural products. As the length of the period increases, the likelihood of abnormality in the base price decreases. The prices of agricultural products depend much upon the current year's production and production depends so much upon the weather, which is quite variable from season to season. No year passes in which there has not been abnormal production for some crop, and as a result, an abnormal price. One might readily say that agricultural prices are never in equilibrium among themselves. Even a five-year period is not long enough for the prices of *all* individual agricultural products to be in their normal relationships to each other. Short base periods result in abnormal base prices for agricultural products. These, in turn, lead to erroneous conclusions regarding the relative levels of the prices of individual commodities, and also to discrepancies between the intended and actual weights.

Since 1914, there has not been a period of comparatively stable prices even approaching five years in length. The use of a five-year base eliminates to a large extent the difficulties described above, which are due to year-to-year variability in the production of individual farm products. It is a well-known principle of statistical theory that the variability of means of samples decreases as the number of items in the sample increases.

Conclusions

The main disadvantage of 1910–14 as a base period for farm price studies is its remoteness from the present. This disadvantage is more than balanced by the fact that the price structure more closely approximated an equilibrium than in any period since 1914. Moreover, for most products, this period was sufficiently long that the average base prices were approximately in their normal relationships to each other. Furthermore, during this period, there was a minimum of change in the monetary systems of the world.

At present, an ideal base period does not exist. The 1910–14 period satisfies rather well all the major tests for a good base, except the test of recency, and most closely approaches the ideal. All possible periods since 1914 would be more desirable from the point of recency, but none of them can compare with 1910–14 in any of the other qualifications.

Recommendations

With passing time, the 1910–14 period becomes more and more remote. As soon as the price structure approaches an equilibrium and conditions remain relatively stable for a few years, there should be no hesitation in abandoning all previously-used base periods. Until that time comes, it will be advisable to continue with the 1910–14 base.

It has been argued that, since fluctuations in business, porduction, and prices are becoming more violent with passing time, there is little likelihood of a stable period long enough to satisfy the requirements of a good base. If this proves to be true, and the 1910–14 period becomes too remote, a satisfactory base period may be obtained by the use of a relatively long period during which the price structure is in various stages of equilibrium.

A BASE IN THE 1920–29 PERIOD FOR FARM PRICE STUDIES

E. L. Butz
Purdue University

Index numbers of farm prices serve many useful ends, the most important of which is undoubtedly the development of a statistical tool to measure the position of the agricultural industry relative to that of other industries, as well as to measure its own position at a given time relative to its position at some other period in its history. From purely a theoretical point of view, then, one base period should serve as well as another, since we are interested chiefly in relative comparisons. On the other hand, important considerations of a practical nature must influence the choice of a base period if the farm price series built upon it is to be most useful.

It is the purpose of this manuscript to develop a number of factors which appear to favor the selection of a post-war base period for farm price studies. Specifically, the data presented will support the five-year period 1924–28 as a base; however, the majority of the argument following can be applied to any period during the decade of the 1920's with but minor qualifications. Although the manuscript is built largely around Indiana price and index comparisons, it is felt these data will be typical of the North Central states, and in the main, of the remainder of the country.

The more in the past the base period, the less concrete is its meaning, even in the minds of those older individuals whose business experience antedates the base period. Ideally, considering this point alone, the base period should be as recent as is consistent with other important considerations.

The majority of farmers and other people who use farm price index series today have entered business since 1910–14. A large proportion of trained agricultural economists, whether teacher, extension or research workers, are unable to connect any experience of their own with the 1910–14 period. A person under 45 years of age today is unlikely to have had any business experience during those years. Few students in agricultural colleges today even lived during the pre-war period. A survey of slightly over 100 students in the freshman farm accounting course at Purdue University this year showed that 99 per cent were born after 1914, while 78 per cent were born after 1918. These ratios are probably typical of the entire country. The majority of present day graduate students were very young, if indeed they had yet been born, during the 1910–14 period. Even at its best, the picture of pre-war normality

must remain an abstract and somewhat mythical concept to this ever growing class of individuals. The period 1924–28 is sufficiently recent to have meaning with the majority of these individuals.

There has been ample justification in past years to refer to the pre-war period as one of normality and equilibrium. The index of wholesale prices in the United States for the last 150 years or longer has fluctuated about 1910–14 as 100. At times it was above or below the 1910–14 level for comparatively long periods, but it apparently always tended to seek its level at or near the average of that five-year period. With but few exceptions, price indices of individual commodities have tended to behave in similar fashion. In this respect, then, the 1910–14 base years have fulfilled an important prerequisite of a base period.

Almost as soon as one begins to work with farm price series, he finds himself using the concept of purchasing power of farm products. Perhaps the statistical concept commonly known by that term is used as widely as the index of farm prices itself. Indeed, the position of farm prices relative to other prices is, in the long run, far more important than the absolute level of farm prices per se. Given time to adjust itself to the new price level, our agricultural plant could be about as prosperous with three dollar hogs and twenty cent corn as with ten dollar hogs and sixty cent corn. Ignoring for the moment the long-time fixed charges inherent in agricultural production, it is the relative and not the absolute position of farm prices upon which farm prosperity depends.

The concept of farm purchasing power must necessarily be relative. Again it is necessary to assign a value of 100 to purchasing power in the base period selected. This implies a normal purchasing power during the base period. The frequency with which the phrase "pre-war parity" has been used during the last decade or longer indicates conclusively that nearly all of us accept as normal the purchasing power of farm products which prevailed during that period.

The movement of farm prices in the two decades since the War has all but exploded the theory that pre-war purchasing power was normal. The long-time tendency of farm prices relative to the general price level in the United States had been gradually upward for more than a century before the World War. The relative price position of agricultural products had improved materially during the era of rising prices and extending industrialization from the early 1890's to the 1910–14 period. Although price improvement during that period was gradual, prices of agricultural products and of other raw materials, as usual, rose relatively more rapidly than other prices entering into the wholesale price index. Conse-

quently, the value of farm products, measured in quantities of goods and services they would purchase, was higher in the 1910–14 period than it had been for many years previously, except for relatively short and infrequent periods which were generally the result of abnormal economic conditions during or following our major wars. At no time since 1920 has the annual index of farm purchasing power been as high as the 1910–14 average. It appears to be a safe conclusion, then, that the favorable relative position of farm prices during the five pre-war years was unique in the history of United States agriculture.

It appears that "pre-war parity" was not parity at all. Evidently, the American farmer enjoyed a price differential during those years that he cannot hope to enjoy again except for brief intermittent periods. It may be desirable for agriculture to set its goal high when farm leaders and legislators are attempting to raise farm purchasing power, but we should take care not to deceive ourselves regarding the normal level of farm purchasing power. Economic ratios are generally very stable, and shift slowly if at all.

The secular trend was recently calculated for the December 1 purchasing power of Indiana corn from 1867 to date, based on 1910–14 as 100, and using logarithms with the "least squares" type of trend line. At no time did the trend reach 100. It attained a maximum value of 95 in 1916, since when it has declined slightly. There is every evidence that the 1910–14 average was abnormally high, since in those years purchasing power was above even the crest of the long-time trend. It is entirely likely that secular trend of purchasing power of other important farm products would disclose similar situations.

The Indiana Farm Price Index is constructed from the prices of 17 farm commodities which account for approximately 90 per cent of gross farm receipts in Indiana. Based on this farm price index, purchasing power for the period 1924–28 is 87 per cent of the 1910–14 period. However, when the weighting of individual prices in the above index is changed to conform with quantities marketed in the 1924–28 period, then purchasing power for the period 1924–28 is 94 per cent of the 1910–14 period. Thus, agriculture appears to have had a competitive advantage of approximately six per cent during the pre-war period over the period 1924–28, provided changes in cost relationships in agriculture and in other lines maintained the same relative position in both periods. This difference is probably much smaller than is generally believed to exist. It should be noted at this point that farm purchasing power during 1924–28 had recovered materially from the agricultural depression starting in 1920. If the base period for farm prices were shifted to

1924–28, purchasing power of 100 could be taken as indicating parity prices with more widespread personal conviction than is true today.

A convincing argument in favor of changing the base period from 1910–14 to a later date is that pronounced economic changes have occurred since 1910–14. Conditions and costs of production have been seriously altered. New financial institutions, such as the Federal Reserve System and the Farm Credit Administration, have been established. The growth of cooperative marketing in certain fields, the advent of the motor truck, and the development of mechanical refrigeration have materially affected methods of distribution. New crops have assumed commercial importance since the war, while others are no longer important. Mechanical power is rapidly displacing horse power.

Price and quantity data are both more complete and more nearly accurate for recent years than for the pre-war period. Price reporting has improved considerably since 1910–14. Certain price and production series are available only since 1920 or later. It is difficult to include a recent price series, as that of soybeans, for example, in a price index based on 1910–14. It is more advisable to select a base period for which data are accurate and easily available and to work back from this base into the period when data were less authentic and less plentiful, than to select a distant base and build forward from it.

There is a growing tendency among agricultural economists to use farm price series in connection with farm income series. Reliable data on farm income by states and smaller divisions are comparatively recent. A recent base for the price series would facilitate its use for such purposes.

It is sometimes argued that the tremendous price fluctuations during and immediately following the war so disturbed the economic equilibrium that a post-war base is out of the question. However, a critical examination of the price structure will reveal that costs in industries that may have been unduly depressed or inflated during that period were, in the main, approximately in a position of equitable adjustment with prices by 1924–28. Land values and farm wages, for example, were commensurate with farm prices during that period, although interest on existing indebtedness and, to some extent, taxes had to wait until the early 30's for adjustment.

Proponents of the 1910–14 base period sometimes contend that those years are the most recent period in which approximate economic equilibrium existed. Perhaps they are partially correct. The 1910–14 period followed a longer period during which there was

much less fluctuation of the prices of individual commodities relative to each other, than was true of the years immediately preceding 1924. The former long-time period was also characterized by less violent general price fluctuations than was the latter. Therefore, it seems likely that prices were more nearly in equilibrium during 1910–14 than they were during 1924–28. On the other hand, during fourteen years of rapid change such as we experienced from 1910–24, it was to be expected that technical improvements, among other things, would lower production costs of certain commodities more than of other commodities, with the inevitable result that relative price differentials made their appearance. This change has also been apparent in different lines of agricultural production. As a result, we have attained a new equilibrium. This type of change is inherent in a dynamic economic society.

The period 1924–28 was sufficiently stable to permit the development of partial economic equilibrium. It should also be noted that the greater absolute fluctuations of prices in 1924–28 than in 1910–14 are minimized somewhat when placed on a relative basis. That is to say, larger absolute fluctuations about the higher base of 1924–28 may be little or no more serious than smaller fluctuations about the lower base of 1910–14.

It is always a weak position to contend that one should change his procedure because someone else has already changed. However, the Bureau of Labor Statistics has shifted the base of its wholesale price index from 1913 to 1926. The Federal Reserve Board, important state colleges, large banks and private business forecasting agencies have shifted their bases into the post-war period. It would be in the interest of less confusion and misunderstanding if a common base period were used by all important agencies reporting price and production indices.

In conclusion, the main points favoring the 1924–28 period as a base in farm price studies follow:

1. The 1924–28 period is sufficiently recent to have meaning in the personal experience of most people who are using price index series today.

2. With the devaluation of the dollar, it is expected that prices will be more likely to fluctuate around the 1924–28 base than the 1910–14 base.

3. Purchasing power of farm products was probably above "normal" during 1910–14.

4. Pronounced economic changes have occurred since 1910–14.

5. Price and quantity data are more complete and accurate for recent years than for the pre-war period.

6. Costs in industries that had been unduly depressed or inflated since 1910–14 were mostly in adjustment with prices by 1924–28.

7. The period 1924–28 was sufficiently stable to permit the development of partial economic equilibrium.

8. Important agencies have already shifted their base to the post-war period.

9. It is very difficult to look backward from the present and obtain an accurate picture of conditions as they were 25 years ago. In view of the fact that we are living and producing under post-war conditions, it seems logical to relegate the war and pre-war periods definitely to the past and to select a base period representative of present conditions.

THE BASE PERIOD FOR PARITY PRICES

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There are four aspects of a base period for parity prices that we wish to point out. One is relative stability in the relation between agricultural and industrial prices and between agricultural and industrial per capita incomes. The second is the number of present day farmers that were employed in farming and perhaps employed on the same land during the base period. The third is the magnitude of technological changes and their bearing on present net returns from production in comparison with those of the base period, and the fourth is whether or not base period price relationships are economically attainable.

In discussing the first aspect, that of general price stability, and a prosperous balance between agricultural and industrial incomes, Ezekiel and Bean pointed out in 1933[1] that: "Although there have been constant changes in the relation between farm prices and prices of other commodities, there has been a persistent long-time tendency for farm products to rise compared to other commodities. The relative value of farm products tended irregularly but unmistakably upward over the entire period from the end of the Napoleonic wars to the decade after the World War".

The fact that during the 1909–14 base period the relative purchasing power of farm products was the highest in over a hundred years has led critics of the selected base period to point to it as the Golden Age for American Agriculture. If this was a Golden Age for farmers who had started farming in the last part of the 19th century and in the first ten years of the 20th, it had no necessary golden significance to farmers in 1932 who had started farming after 1910. Bearing in part on this point Ezekiel and Bean wrote:

"It is evident from these facts that if prices of farm products had maintained their previous trend, by 1933 the normal purchasing power of farm products would have been between 100 and 105 per cent of the level reached in the period from 1910 to 1914 instead of only 65. . . . The period from 1909 to 1914 represented one of considerable agricultural and industrial stability, with a good balance between the production and the consumption of each product with equilibrium between the purchasing power of city and country, with well-sustained industrial activity, and little unemployment. In the post-war period, on the contrary, the stimulus of war demand and the abnormal effects of post-war readjustments prevented the reestablishment of the pre-war balance on any sort of lasting basis.

[1] See "Economic Bases for Agricultural Adjustment Act," M. Ezekiel and L. H. Bean, U.S.D.A., December 1933.

Throughout the post-war decade, agriculture was afflicted with chronic surpluses showing first in grains, then shifting to livestock and livestock products, then showing up in grains again and in cotton. In selecting the prices of the pre-war period as the standard for readjustment, the act thus bases the parity prices upon the most recent period when economic conditions, as a whole, were in a state of dynamic equilibrium."

The question may be raised as to what the parity price standard in general would have been had some other period been adopted. These differences can be readily pointed out by comparing the ratios of prices received to prices paid for the 1910–14 period, the post-war 1924–29 period and the entire period 1910–29. For agriculture as a whole the parity price standard based on 1924–29 price relationships would have been 5 per cent lower than that based on the 1909–14 standard and had the entire period 1910–29 been used the parity standard would have been only 2 per cent less. For some individual commodities, of course, either of these two periods would have given higher parity price standards and for others, lower ones. In 1938 farm prices in general were 77 per cent of prewar parity, 79 per cent of parity if 1910–29 were taken as base or 81 per cent if 1924–29 were taken as base, a difference of only 5 per cent between the lowest and highest of the three standards. These figures are based on the index of prices paid for goods (exclusive of taxes and interest) which is now in process of revision.

A point not frequently raised against the use of a prewar-base period is that there are relatively few farmers operating farms today who acquired those farms in the prewar-base period. On the basis of the 1935 agricultural Census we estimate that about 90 per cent of all farmers now operating have been on the same farms no more than 25 years. This would mean that only about 10 per cent of the farmers now operating had acquired their farms prior to 1914.

Furthermore, according to life expectancy tables, we estimate that about 40 per cent of those gainfully occupied in agriculture in the prewar period 1910–14 are no longer alive and have been supplanted by a new generation and if we take into account the fact that many of those who were farming before the war and are still alive are not now farming, it is probably safe to assume that less than half of the farmers of the nation have farmed continuously for the past 25 to 30 years.

On the basis of these facts we may rule out as unreasonable any proposal for a base period prior to 1910 (unless one were to argue that there is a greater degree of continuity than these figures sug-

gest from the fact that many sons inherit the problems of their fathers).

Just as those who look upon the 1910–14 period as the Golden Era would argue for an earlier base period, so those who are concerned over the technological progress of recent years argue for a more recent base period. Considering the question of base period from this standpoint, it is necessary to bear in mind that there is a difference between changes in physical productivity and changes in money costs compared with money returns per unit, also that the increase in labor efficiency in industry has been even greater than in agriculture. From 1910–14 to 1937–38 the increase in output per man in agriculture amounted to 26 per cent and in manufacturing to 35 per cent.[2] Therefore, on the bases of physical input-out relationships and net returns the prewar parity standard may fall short; the greater money costs per unit of output may have more than offset increased physical efficiency.

Evidences of increased productivity per unit of labor are contained in recently published studies of the Works Progress Administration dealing with technology and labor requirements in crop production. In the case of corn, these studies show that it required 23 per cent less hours of labor to produce an acre of corn in the corn belt in the period 1932–36 than was required in the 1909–13 period. In the case of potatoes in areas selected for study the reduction in labor requirements per acre, from 1909–13 to 1934–36, averaged 15 per cent; per bushel the reduction amounted to 19 per cent. In the case of cotton a reduction of 15 per cent in labor requirements per bale was found for the Eastern section and 18 per cent for the Western, between the prewar period 1907–11 and 1933–36. Production for agricultural workers for the country as a whole increased 15 per cent from 1910–14 to 1932–36, according to the Works Progress Administration study "Trends in Employment in Agriculture, 1909–36." The increase would have been even larger except for the droughts of 1934 and 1936.

Figures such as these are only partly useful in our question as to the bearing of technological improvements on the selection of a base period. We need additional data on total costs and returns per unit. Chiefly to illustrate this problem we may make use of such data as are available on costs and prices and incomes, bearing in mind that all of this material is in the process of possibly substantial revision. Thus by utilizing published estimates of selected farm expenditures for the country as a whole and expressing these

[2] See part 1, page 22 of the Land Planning Committee's 1936 report to the National Resources Board for data from 1900–34.

on a unit basis by dividing these annual selected expenditures by an index of production, we may obtain an approximation to changes in costs per unit.[3] The outstanding features here are that costs per unit in relation to price were about 50 per cent higher in 1921 than in the 1910–14 period. They averaged about 15 per cent higher during the period 1923–29 and then rose to 69 per cent above the prewar relation in 1932, the year of unusually low prices. Not until 1937, the year of record crop production, was the prewar relationship between costs and prices per unit restored, and the decline in prices and lower volume of crop output in 1938 again raised costs per unit in relation to prices to about 20 per cent above the prewar relationship.

In a general way these broad changes are borne out also by similar studies for cotton and wheat. In the case of cotton we have made estimates of selected expenditures,[4] divided these by annual production; and the costs per unit were then divided by the average price received for the crop.

The failure of costs per unit to decline with prices per unit are strikingly shown in years of low prices. Note for example the fact that costs were unusually high in relation to prices in 1914, 1920, and 1921, 1930–31 and 1938, years in which prices were low as a result of a combination of business depression and abundant supplies. In 1922 and 1927 the prewar relationships prevailed, but during the period 1934–37 costs were relatively higher than in the prewar period by about 40 per cent.

In the case of wheat[5] we have pieced together the various Bureau of Agricultural Economics studies, from 1909, dealing with costs of producing wheat per bushel and by comparing these with prices received for the crop we find that in 1921 and 1923 costs were relatively 50 per cent higher than in the prewar years. During the years 1924–27 they were approximately in line with prewar relationships, but after that rose to about 140 per cent in excess. By 1937 the prewar relationship was restored but in 1938 again rose to about 75 per cent above the prewar relationship.

[3] For total selected farm business expenditures except wages see the "Agricultural Situation," May 1, 1937, page 19. Wages, also some of the selected items, are shown in table 557, page 434, "Agricultural Situation," 1938.

[4] See "Cotton" (Facts relating to cotton prices and purchasing power, out-of-pocket cost of production, net farm income from cotton and purchasing power of income, relation of net income from cotton to National Income and other data bearing on the cotton farmer's economic position), AAA, 1935.

[5] Unpublished Agricultural Adjustment Administration data based on published Bureau of Agricultural Economics studies with the necessary adjustments to make the data for earlier years as nearly comparable as possible with the more inclusive studies now published, except that for the years 1910–12 inclusive per acre costs were estimated from the trend in prices paid including taxes, interest and wages.

In short, these studies, qualified though they need to be, indicate clearly that: (1) any advantages agriculture as a whole and wheat and cotton producers may have enjoyed because of increased efficiency in production has been more than offset by declining prices and (2) that prices more nearly in line with parity prices on any base after 1910 would serve toward restoring former margins between returns and costs.

The final point that we wish to touch on is that of attainability. This has to do chiefly with factors of demand rather than with factors of production. There is very strong evidence suggesting that demand for American farm products both in the domestic and foreign markets has so shifted that we can no longer bank on a continuation of the long-time upward trend in the relative purchasing power of farm products in exchange for industrial goods and services. This possibility was surmised in 1932–33 by the proponents of the prewar parity standard and recognized in the Agricultural Adjustment Act in providing for a restoration of parity prices in step with the improvement in domestic and foreign demand conditions. The shortages created by the droughts of 1934 and 1936, when certain prices reached prewar parity levels, revealed clearly that prewar parity prices with normal supplies could not be supported by the prevailing domestic purchasing power and reduced foreign demand. It is in part the recognition of this fact that led Congress to adopt parity income as a supplementary objective and to provide for loan limits in a range of 52 to 75 per cent of prewar parity.

In conclusion it may be added that in an age of increasing technology and dwindling foreign demand probably any base period for parity prices between 1910 and 1930 is likely to give unattainable price standards. Perhaps more important than base period considerations are the questions as to social objectives, and the best methods of obtaining them in a price economy.

LAND VALUES AND GOVERNMENT AGRICULTURAL POLICY

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In recent years there has been inaugurated the greatest medley of monetary, production adjustment, credit, land retirement, and conservation programs that the country has ever seen. To separate statistically the effects of each would require altogether too great an expenditure of energy and would probably yield extraordinarily meager results.

Nearly all elements of the program have, however, been designed to raise gross or net farm income either immediately or over a period of years (as in the case of certain soil conservation efforts). There has been great and acrimonious disagreement as to whether production adjustment or monetary revaluation played the greatest role in promoting the rise in farm income from 1933 to 1937–38. There is no time to enter into that debate here but certainly it would be hazardous to attempt to determine statistically not only the effects of these two on the value of land but to take account of the influence of the droughts of 1934 and 1936 as well.

In general, the more formal and the larger aspects of government agricultural policy have had diverse and at times conflicting effects on land values. They have, perhaps, contributed, in their immediate effects only moderately if at all to land value stability. Furthermore, the rapid changes in the government's program have added one further element of uncertainty to the real estate market and that fact must be counted as a factor of instability.

It would be quite unfair to the present government, however, to rest the case at this point. It would be unfair because the more hopeful outlook for land value stability is to be found in some of the informal rather than the more formal aspects of the government's program. There are a number of these informal aspects of policy that have had some influence but a discussion of six of the most important among the many will serve to make the points that should be presented.

I. One of the most important of these informal policies may be labelled "the policy of taking stock." Taking stock is a planwise policy. One of the greatest forces for land value instability in the United States has been the general ignorance in the land market, of the character and quality of land. More than any previous Administration the present one has attempted to make amends for this unfortunate lack of information by supporting and financing plans to classify land and to analyze the experience of the past with

respect to various kinds of land used under varying conditions. Supporting these land classifications studies have been pertinent studies of population growth, mortgage foreclosures, tax delinquency and others equally suggestive. This task of analysis was begun decades ago but has, perhaps, never been carried forward as forcefully as during the last few years under the guidance of the AAA, the Department of Agriculture generally, and the National Resources Committee.

II. There has never been a period in the history of the country when the interest in diverting erstwhile crop or pasture land to forestry; game refuges; parks; monuments; recreational, wildernesses and vacationing areas and the like; has been so universal as at present. Surely it will mean something to the stability of farm land values when the line between lands suited to farming and those not so suited is more firmly drawn. In practically every state in the union some one or more studies, usually with the active participation of the Department of Agriculture, are being carried on to designate lands unsuited to agriculture. These investigations are followed by zoning, tax reversion, or conservation district laws or more positively by acquisition programs to place the land under managed development for forestry, recreation or wild life refuges.

Parenthetically it is worth noting that one of the most telling efforts to place these poor lands beyond the temptations to enter farming use, would be to make a satisfactory provision for forest credit. Unused wild lands, however infertile, are a tremendous temptation to pioneer-minded, land foolish Americans. The best insurance against abortive efforts to develop such land for farming is to place them under positive forest management. A satisfactory credit program would probably do more than any other one thing to facilitate the extension of forest management to the vast acreage of such lands now virtually unused.

III. A third government policy of some importance in this same connection is that of emphasizing and encouraging a higher level of living and consumption on the farm. Farm housing standards are woefully below those of cities and towns. Sanitary provisions and household conveniences are no better comparatively. Provision for hard surfaced all weather roads and electrical service for farming communities is in an early phase of development. In its housing and rural electrification programs the government is accomplishing something in diverting attention of farm investors away from the land market. Speculative fevers should run less high among farmers who are acquiring a greater interest in modern conveniences and home improvements. Over the longer period such a development should mean something for land value stability.

IV. A further policy that has a formal as well as an informal place in governmental programs is that broadly labelled as "conservation." Part of the instability of land values in the past has arisen because of the tolerance of pioneer farmers toward exploitative methods of production. That is, they were too willing to maintain their incomes at the expense of their land. As land lost its topsoil and much of its fertility, cost increased and land values fell. If the government's efforts to impress the lessons of conservation are successful, future farming will be conducted so that the productivity of land is more nearly maintained. And with productivity more nearly constant, one cause of land value instability will be gone.

V. Closely related to the policy of promoting conservation is that of promoting "sophistication" in farm land use. The influence of government in improving the pattern of land use generally has been exerted most positively on the cropland-forest-land and cropland-grazing-land margins as noted above. Its role in bringing about a greater sophistication on more nearly normal or supermarginal agricultural areas, has, however, not been entirely negligible. American farm lands have been settled so short a time ago and have, particularly in Middle Western and far Western areas been in use so short a time, that their crop or pasture adaptations are not yet well known. In fact some spectacular migrations of crops have been taking place even in older agricultural areas of the East. The shifting of centers of apple production in New York is a case in point. The changing location of dairy and poultry production in the East and of hog production in the West are equally pertinent points. A few years ago the great new crop seeking a place on farms was alfalfa. Lately the introduction of lespedeza on less fertile soils of the southern parts of the country has been quite as spectacular. Quite recently also the displacement of corn by the grain and forage sorghums in areas troubled by intermittent drought has had some extraordinarily satisfactory results. Farmers, experiment stations, seed companies even more than the Federal Government have carried forward this drive for greater sophistication in land use. The Soil Conservation Service has, however, made great contributions in this respect and will apparently be able to move even more rapidly forward on this front now that it has charge of the acquisition phases of the land retirement program. As a nation we are perhaps centuries behind Europe in many of the aspects of land use sophistication. Land values will be more stable when the articulation of land with the proper crops is on a more adequately tested basis.

VI. Finally there is a last and somewhat inscrutable point to be

made in connection with the general policy of government with respect to planned development. Under a *laissez faire* system governments are excused from being conscious of most things that are happening in the nation. Governments nowadays are accepting far greater responsibility than governments of the past. The New Deal may have been somewhat fatuous in its willingness to take on new responsibilities but that is perhaps to be explained on the basis of its desire to mature too rapidly the inhibited governmental structure that it found on coming into office. The relationship of enlarged governmental responsibilities to more stable land values is somewhat remote. However, a government aware of impending technological changes, of prospective changes in population growth, of the need to supplement private investment—a government not inclined to venerate and idolize the gold standard and with far greater sophistication in relation to foreign trade than governments of the past, is also a government better equipped to cope with forces of instability. Land value instabilities are a result of these more fundamental economic instabilities. If a more mature government can be expected to accomplish something for general economic stability as, for instance has been done in the Scandinavian countries, land values should feel the effect. If nothing can be expected from government in this respect this last point is not well taken.

Briefly then, the more formal of recent governmental policies and programs for agriculture have had such diverse influences on land values that their net impact is probably indeterminable. Collectively they have not, in the opinion of the writer, had a particularly stabilizing effect. On the other hand the continued and more vigorous prosecution of the enumerated informal policies appears to have much promise. Their influence is quite universally on the side of greater stability and in total and over the longer period their significance probably transcends that of the more formal policies.

MONETARY POLICY IN RELATION TO LAND VALUES

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Let us assume first that the entire rise in the level of farm prices during the 1933–34 crop year over the prices of the 1932–33 crop year was due to devaluation. The price advance of these two seasons was from an index of 62 per cent of 1910–14 in 1932–33 to 81 per cent in 1933–34, or a rise of 30 per cent. According to my analysis covering the entire period 1912 to 1937,[1] a price rise of this magnitude would have its major influence on land values during the first year and perhaps as much additional influence during the next two, and the total advance in land values over the three year period would be about 7 or 8 per cent. This may be compared with the 16 per cent advance that has taken place between March 1933 and March 1938. But inasmuch as other recovery measures, such as the activities of the AAA and NRA, also affected farm prices after March 1933, we can not ascribe the 30 per cent rise in farm prices entirely to devaluation. Perhaps a half would be a more nearly correct assumption; in which case, we would tentatively conclude that about a fourth of the rise in land values since 1933 may be attributed to devaluation. And this would amount to several billion dollars added to the total current value of all farm land and buildings.

Monetary policy of the devaluation type does not affect land values uniformly in all regions. Regions that produce chiefly for domestic markets do not experience an improvement in land values as an immediate and direct result of devaluation. This is due to the fact that devaluation is a monetary device aimed to affect immediately the domestic prices of commodities that are on an export basis or that are subject to international supply and demand conditions. Our chief export commodities, such as cotton and wheat, rose in 1933 as a result of devaluation but domestically consumed products, such as meat animals, poultry and dairy products, were not directly affected. In subsequent years, as the higher prices of our international products affected the domestic products through competition and substitution, the latter may be said to have shared the effects of devaluation.

The immediate effect of devaluation on the export commodities and not on the domestic may be clearly seen in the changes in land

[1] "Deflation and the Price of Land," Journal of Farm Economics, XX, (1), 310–320, February 1938.

values for the different states between March 1933 and March 1934. States producing chiefly domestically consumed products experienced no rise in land values. This is true for such states as New York, Maine, New Jersey and Wisconsin. States producing farm products both for domestic and foreign markets like Nebraska, Kansas, Iowa, Illinois and West Virginia, showed increases in land values between 1933 and 1934 of 5 to 8 per cent, whereas in the South in such cotton states as North and South Carolina and Alabama, the increases amounted to 10 to 20 per cent. We have made no attempt to separate the effects of devaluation and of other factors on these regional land value changes.

The monetary policies that were adopted after 1932 appear to have had considerably less influence on land values than did the monetary policies during the war period. This we infer from the fact that for a given rise in agricultural prices our studies show only about three-fifths of the rise in land values that a similar rise in farm prices brought on during the war years. This fact can be shown readily by tracing the course of both prices and values for both periods.

The failure of land values to respond proportionately to the rise in agricultural prices since 1932 raises the question as to whether prices have been as closely associated with income and other factors influencing land values as they were during the war years. During the war period, most of the variations in farm income were due chiefly to variations in the level of farm prices. This was also the case during the period since 1932. It is true that prices in 1934 and in 1936 were given a sharp lift by crop shortages in addition to the influences of devaluation and other recovery measures, but so were the prices of 1917 and 1919 affected by small crops, although to a smaller extent.

Differences in cost variations also do not explain the failure of land values to rise in proportion to prices as they did in the war years; for farm income after deducting production expenditures rose more after 1932 than after 1915.

We suspect that the failure of monetary policy to affect land values recently as much as during the war years is due to the fact that we are now in a declining phase of the land value cycle, whereas in the war years we were still experiencing the momentum of a rising phase. Ever since 1925 an increasing number of farmers and those interested in farm land from the demand side have become aware of the greatly altered prospects for farm prices and farm income. They see in the activities of the AAA efforts on the part of the Federal Government to protect farm prices and farm income from the impact of huge surpluses, foreign competition,

curtailed foreign demand and persistent low purchasing power for farm products on the part of several millions of consumers in the domestic market. Speculative psychology under such conditions can hardly be expected to flourish, and consequently land values in recent years have had very little if any anticipated profits in them. They have come nearer to representing the capitalized mortgage interest than at any time since the turn of the century. In Iowa, for example, about 90 per cent of the average value per acre of cash rented land was represented by net rent capitalized at 5.5 per cent in 1903 and 1904. Only about 50 per cent of the inflated values of the war years represents capitalized rent. At present, with little if any inflation or anticipated profits in land values nearly 90 per cent is represented by capitalized rent.

In our discussion of land values last year we pointed out there was no evidence of a speculative tendency in land values either in the average for the country as a whole or for the several agricultural regions. With another year's data in hand we still are of that conclusion. Our analysis of regional land values continues to suggest that if farm prices and farm incomes were to remain relatively stable at the present level, land values would tend to drift slowly downward, particularly in the Corn Belt, and in the hay and dairy regions. In the South the depressing influence of factors other than price and income have not been in evidence since 1935. Consequently, land values in this region have shown advances more nearly in line with their usual relation to rising income. The land value data for March 1939 will show whether the lower prices and incomes of 1938 have altered these regional tendencies. Finally, it is my impression from the admittedly limited facts we have examined that there have been no additional influences of devaluation on land values since 1935 or 1936 and that in 1937 and 1938 land values were kept generally stable by the fact that stimulating influences from improved prices and land incomes were offset by psychological and other depressing influences and that land values, to put it optimistically, are not likely to advance until prices and incomes are restored above the levels attained in 1936–37.

LAND VALUES AND FARM CREDIT POLICY

A. B. Lewis
Farm Credit Administration

The practice of lending agencies is determined by the prevailing theory on the relation between farm incomes and farm real estate values. The generally accepted theory is that the value of farm real estate tends to be a capitalization of net income after reasonable wages have been deducted for the labor of the operator and of other workers. This presupposes that the labor returns of operators on poor land will be as high as those of operators on rich land. It presupposes that the value of the real estate on farms of different productivity, as reflected in market prices, will be in proportion to their different net rents, except that so-called economic frictions will prevent the relation from being perfect at all times.

Were this theory valid it would be proper to lend the same percentage of the value of real estate on farms at different levels of productivity. Farmers could live as well on one farm as on another, considering the outlay required to maintain the capital; and the sacrifices required to increase the equity would be about in proportion to the advantages obtained.

The loan policies of most lending agencies are believed to be such as to indicate that the usual theory of land valuation has actually been applied in adjusting loans to productivity. For example, recent studies of land classification and loan experience in several areas have shown that Federal land bank loans made prior to 1933 were the same percentage of appraised value on all grades of land within each area. These studies have also enabled us to measure the results of this policy.

In three crop-farming counties in a certain eastern state, loans averaged 46 per cent of appraised value in fair land areas, 45 per cent in good areas, and 47 per cent in very good areas. Foreclosures over a 20-year period were 29, 17, and 11 per cent, respectively. Apparently the loan-paying ability did not bear a standard relation to valuation at all grades of productivity. Very similar results were obtained in sample studies in an eastern dairy area, in a southern cotton county, in several Great Plains counties, and in a large dry-farming area of a mountain state. In each case loans were almost the same percentage of appraised value on all grades of land, but the loan experience was much more favorable in the more productive than in the less productive land classes.

Since farm management data began to be available through farm accounting and farm survey studies, an increasing number of people have become acquainted with the fact that the commonly

accepted theory of land valuation is not practical. The knowledge is now quite widespread that labor returns as well as returns to capital are comparatively high on relatively productive land. Many studies have brought out the fact that real estate values, whether determined by farmers, appraisers, assessors, or buyers and sellers, do not capitalize in themselves the whole of the difference in productivity between one grade of land and another.

The usual reaction to this relationship is to conclude that poor land is overvalued and good land is undervalued, with relation to its productivity, by farmers, appraisers, assessors, and buyers and sellers. The assumption is that the true value is the capitalization of net income to capital, after all labor has been reimbursed, and that any deviation from this value reflects an error of judgment. This conclusion, however, is contrary to the axiom that economic value can be expressed only comparatively, and that the only means of determining value is through exchange. Sale values are the only real and true values of real estate in money, and they certainly are the only values which concern a lending institution in measuring its security. Appraised values and assessed values are merely estimates of reasonable sale values, normal or otherwise, for one period or for another.

Rather than to assume that all kinds of practical valuations are always subject to considerable error when compared to the theoretical standard, it seems more reasonable to confess that the theory is defective and to try to devise another that will work. It should be possible to determine by statistical analysis what the relationship between income and capital, as measured by exchange value, really is.

A practical theory of valuation would be of tremendous help in the farm credit field. There is now a tendency to try to make appraisers value land in such a relation to productivity that a standard loan, in per cent of the appraised value, can safely be made under usual circumstances on any grade. This is an attempt to force an unworkable theory to work. If such valuations were attained, they would appear to farmers and appraisers to be unreasonably low in relation to sale values on poor land; and on good land they would be unreasonably high, giving an inflated value to the security. Their very unreasonableness will help to prevent such values from being offered or accepted; but there is nothing to prevent the loans from being made, as in the past, *as if* the appraised values *were* actually in proportion to loan-paying ability.

If appraised values of different grades of land are to represent a reasonable valuation of the security, as all the laws on the subject intend, they cannot at the same time present an unvarying relation

to the maximum loan that is repayable out of income in different land classes.

Some statistical data on the relationship between farming returns and farm land values have already been discovered at Cornell University in connection with land classification studies.[1] In the course of these studies farms were classified by inspection as poor, fair, good, very good, and excellent, principally on the basis of the size and condition of the buildings. This classification divided the farms into productivity groups as they would have been divided on the basis of income data for a period of years, since income over a period of years is what has most effect on the size and condition of buildings.

In two counties, when farms were grouped in this way, the total farm capital on each group of farms, as estimated by the farmers, was found to be nearly equivalent to the labor returns per worker capitalized at 5 per cent. In other words, the average return to the owner of capital was approximately the same as the average return to a worker on the farm for a year, whether operator or hired man.

If further study should prove that this relationship, or something similar to it, is the true basis on which the average market price of land of different grades is determined, the fact would have significance from the standpoint of land appraisal, the recommendation of loans, and also in the taxation of real estate. There is space to state only briefly a few of the important implications. There would no longer be any question of over- or under-valuation of real estate if it were appraised directly on the basis of probable sale value under prescribed conditions. Perhaps reasonable security values could even be calculated on the basis of normal prices and estimated physical production. Most important of all, loan recommendations would take account of the fact that only the more productive grades of land can support maximum loans in proportion to the normal value of the security, while on successively lower grades the average loan percentage, if equally good experience is to result, should be progressively smaller. A wider appreciation of the value of land classification studies, as outlining areas where different normal levels of capital accumulation per farm can be expected, would also follow. The general result would be appraisals as good as or better than present appraisals for estimating the security, and loans that would be much more closely in accord with ability to repay.

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[1] Lewis, A. B., "Relation of Total Capital per Farm to Capitalized Labor Returns per Worker," *Cornell University Farm Economics*, No. 98, 2396–7, December 1936.

LAND VALUES AND COMMERCIAL BANK POLICY

A. G. Brown
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Through the years, the commercial bank, husbanding the credit resources of the community, went ahead in good times and bad, loaning money on all types of farm land and measuring the good and bad years in business according to the productivity of the neighborhood farms. But it was not until the test of liquidity came in 1933 or the depression months immediately prior, that the commercial bank had impressed upon it the importance of the difference between good and bad farms.

I often think of the experience of my own father, who was a country banker in the twenty-five years previous to 1920. He often referred to the fact that during all that time, in dealing with farmers on a secured and unsecured credit basis, he never charged off one cent of loss in his bank. He did bemoan the fact that he compromised by throwing off the interest in some cases, but never a cent of principal was forfeited. He was working in an "up" market during that time and could hardly have made any mistake.

In 1933 when the Farm Credit Administration was established, the scene was perfect for the acceptance of "Normal Value" as a basis for the making of long-time farm mortgage loans. The banker, of course, had overlooked the desirability of long-time credits because they did not "square" with his idea of liquidity. Too few banks had ever made the requirement of any periodical principal payment. A five-year maturity made his farm mortgage liquid, in his judgment. Contrast this with the present-day plan of amortizing principal and interest over a period of fifteen, twenty or thirty years, with quarterly or semi-annual payments, and you have the present-day acknowledgment that here is an obligation with ever-increasing security which, if properly made on a farm properly appraised, is more nearly self-liquidating than any other type of investment.

As a banker's hindsight is generally good, the problems of the past, in my judgment, though large, seem simple now of appraisial. This whole country had to approach the brink of destruction to appreciate the important place which the farmer held in the economic life of our country. The lender of money had to see the equities of the "blue chips" dwindle into nothingness to sense the real and tangible value of farm land as a basis of credit. The appraiser of land finally visualized the indestructibility of the fertile farm, as contrasted to the poor one, to realize the justification

for the capitalization of land value on the basis of its ability to produce.

I had an experience in 1919 that might be referred to as typical in the consideration of relative land values. Like a lot of other folks who thought all types of farm land would be in demand, and, following the course of least resistance, I became interested in a farm, for which I paid $30 per acre. In fact, I bought 400 acres of that type of land, in preference to buying a better farm of 100 acres at $100 per acre. While I don't own either one of them today,—the 400 acre farm could not be sold for $10 an acre; in fact it would be high at that, whereas the good farm is still worth $100 an acre.

No effort is here made to discuss the technical factors that go to make up land values. The commercial banker has no little abhorrence for the technical. In fact, he has referred to the requirements of the Federal Land Banks as being "red tape," and has said that he would have none of it. Having been a commercial banker most of my business life, I feel justified in saying that the average commercial banker has had too little of the requirements of "red tape" and that if he had had just a small portion of the quantity which the Farm Loan System has acquired, he might not have gotten into the trouble that he did in the making of farm loans or any other type of loans.

Getting down to cases, I want to refer to a personal experience which shows how bankers formerly appraised farms and in too many instances do it the same way even now. Back in 1929, I held a farm loan on what I thought was a better-than-average farm. In fact, I knew that for $2,500 on 160 acres, it was satisfactory in every respect. There was just one rule that I always followed and which possibly kept me from having much trouble with the few farm loans that were in my bank, and that was the uncompromising requirement for the prompt payment of interest. A tardy payment was the sign for me to collect and, with the market provided by the Land Bank System, I generally had no trouble in proving that farms loans were fairly liquid, according to my reckoning of liquidity.

In this particular case, when the borrower became delinquent, I suggested that he go to the local National Farm Loan Association and make application for a loan in sufficient amount to pay the debt he owed me. To my surprise, his application was declined. In fact, no money was offered at all. In just a few months I became President of the Land Bank that had declined the loan and one of my first lessons was to learn just how a great institution that was in the business of loaning on good farm land would have the audac-

ity to decline a good loan. The reasons were many, but the main one was that the farm was so poor and its productivity so low that it could not support a loan of the amount that was needed to liquidate the outstanding indebtedness of the applicant.

I couldn't believe that the appraiser had seen the correct farm, although I had to admit that I had never been over it. It had been appraised by a farmer-director of my bank from the barn-lot and a high point just back of the barn. Soon afterwards, on the pretense of going hunting, I visited the farm, went over every fence-line, as I should have done before the loan was originally made. In fact, every acre of that land was thoroughly covered and, to my surprise, I learned that day how little I had known about farm land and how hazardous had been my experience in making farm loans at all. One forty-acre field was so badly eroded that it had been completely abandoned. Another forty acres had not had any legume or cover-crop for so long that it apparently did not grow anything but blackberries. Most certainly the front fences were in good shape, but the back ones were down. Barn and house were in fair repair, but as a farm unit it was the poorest in the community.

Here is an example where a lack of "red tape" requirement hazarded not only an investment that could have been good—but turned out to be bad—but is also an outstanding example of the practical need of following the farmer and his method of farming, in order to be sure that he is not imposing on his capital—even though he may have made prompt payment of his interest. Soils must be tested, productivity must be weighed and "squared" with loan and living demands,—all factors with reference to desirability and marketability must be good,—but ,with all of these in a favorable light,—the borrower himself must pass an even more rigid test as to integrity and ability and, in addition, have a sense of pride in maintaining his farm—at least on the basis of the average in the community, so that in any fair test of land utilization it will be considered an acceptable farm unit.

Speaking for the commercial bank generally, it would appear that a pretty wide range of rules for land valuation as a basis for commercial bank loans should be made, when you consider the wide divergence of productivity of farms in Cherokee County, Iowa, and Bell County, Kentucky. Bankers in Iowa—if they saw the farms in Bell County, Kentucky, would scoff at the idea that they were a proper basis for a loan in any amount. Bankers in Bell County would be "scared to death" to see the valuations which Cherokee County bankers and farmers put on the land there. But for practical loaning purposes there are good farms in each and a sound basis for their valuation, based upon the relative worth of

the best farm with the poorest. The farmer in Iowa—and the banker too—have greater responsibilities for reconciling farm values with sound investment values because of the larger number of fertile farms and the competition of more loaning agencies, but as sound a loan can be made in Bell County as in Cherokee.

Bell County was one of seven in which The Federal Land Bank of Louisville did not make loans,—mainly because there were never enough farmers who were sufficiently interested to qualify for a local National Farm Loan Association. As one banker in Pineville, the County Seat, told me, "We have good farms and good farmers, —but they don't need more money than they can borrow right in the County. Their wants are not so many; their taxes are low and they are happier and more prosperous in the use of the funds that they can borrow at home."

These two Counties present an illustration of extremes,—one with limited number of fertile farms where the credit system, directed by the commercial banker, utilizes the savings and surplus funds for investment in community resources; the other where a surplus of fertile farm lands makes it desirable to have outside capital competing for their investment,—but in both cases the same requirements of land values are recognized as a basis for sound credit extension.

And if I were suggesting a credit policy or guide for investment in the securities of farm lands, it would be the same for the Bell County banker as for the one of Cherokee County. Such a policy would require the written record of:

1. *The Man.* His health, his integrity, his financial condition, his ability to utilize his land intelligently,—all these must be favorable for the making of a loan. The representations contained in his written application, covering his financial and agricultural ability, together with the physical value of the farm, should be substantiated with a budget of income and expense and a financial statement of his farm operation.

2. *The Land.* The value of the land for agricultural purposes should be the basis of appraisal and the earning power of the land is the principal factor in that appraisal. The farm should be at least forty acres in size. It should have a house and barn and sufficient other buildings which, according to the amount of tillable land, would be necessary to properly house farm tools and products. And, of course, it must be average or better for the community as to location, roads, availability of schools and market, as well as productivity.

A good appraiser, with his knowledge of soils and sub-soils, their strength and moisture-holding possibilities, problems of drain-

age, and other physical factors, should provide a written record that will confirm the representation of the applicant and the confidence of the banker in the physical security itself.

The man plus the land equals the investment. The appraiser's record should substantiate his recommendation of a loan after capitalizing the farm's productivity into ample money value of the land, and after approving the man as being capable of producing its projected income. The result should be a safe, sound and liquid investment that,—measured by the standards of commercial banking experience,—would be considered prime.

LAND RENTS AND LAND VALUES IN ITALY

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In Pavia, Italy, there are two institutions, one the Almo Collegio Borromeo, and the other the Hospital of St. Matthews, both of which have endowment lands which have been a source of income for many generations. The university, if that is what the Almo Collegio has been, has records of its rent receipts from the same 1700 acres in 16 farms of about 106 acres each in the Lower Voghera valley. The hospital lands included 2300 acres until 1826, but since then over five times as much, or about 12,000 acres. The lands of the university were irrigated and produced rents about twice as high as the hospital lands which included no irrigated land. The rent records were examined by a very competent economist, Dr. Guiseppe Medici, now of Torino (Turin), and made comparable by expression in terms of the pre-war gold lira. The records of the non-irrigated lands of the hospital are available for over 320 years and for the irrigated lands of the college for over 275 years.[1] One wonders whether so long a stretch of comparable records of agricultural rents have been previously called to the attention of a national group of economists in the United States. The hospital rent record got under way between the founding of Jamestown and the founding of Plymouth. American colonial history had not proceeded far when the university records now preserved were first being entered in the books.

Trends in rents need not be mistaken for trends in farm realty values. From 1823 on to the end of the period shown here, namely, 1930, there is shown for the hospital lands both land rents and land prices, the latter on a scale fifteen times that of the former.

Hospital land prices advanced after hospital land rents rose in the 1840's, declined after rents declined from 1848 to 1860, rose as rents rose to 1880, advanced mildly to 1890 even though rents fell from 1886 to 1890. In 1894 land prices were higher in comparison with rents than before. From 1894 to the outbreak of the World War, land prices did not advance with rents year by year but advanced in practically equal step during the two decades. The hospital land values decreased slightly from 1914 to 1918, but fell to half by 1920. Between 1922 and 1928, these land prices not only reached the 1914 high point but went to 60 per cent above. By 1924 the hospital land rents were only 6 per cent above the 1914 level, but by 1930 were again 30 per cent above 1914. Throughout

[1] Medici, Giuseppe. Monografia Economics. Agraria dell Ex Circondario di Pavia (Pavia, 1930), pp. 124–130.

the period from 1918 to 1930, however, land rents were in higher ratio to land prices not only than in the period from 1894 to 1914 but also than from 1835 to 1860.

Now let us examine rents prior to 1823 so as to get a 300-year perspective. The hospital lands, being irrigated, showed a tendency after 1720, as possibly also from 1671-1686, to produce rents on a higher trend than the university non-irrigation lands. Irrigation rents increased until about 1720 and while part of this was lost about 1726, they continued to gain slowly until about 1763 when a rapid rate of advance began which continued to 1781. After about 10 years of recession, a slight recovery set in and after 1800 a rapid advance until 1820, then a recession until 1826. Reference to the mounting of rents in ever higher waves until 1926 was made in the comparison with hospital land prices.

Rents on the university non-irrigated lands from 1826 advanced more rapidly than on the irrigated lands until 1860, but showed no upward movement of more than recovery proportions until 1900. From 1900 to 1911 rents on non-irrigated lands increased about 30 per cent. Rents on non-irrigation land advanced only slightly from about 1911 to 1922. Their advance from 1922 to 1925 was not quite so remarkable as that of the irrigated land but their fall from 1925 to 1930 was such as to return them to about the level of the 1909-14 period, while rents on irrigated lands were about 40 percent above their immediate pre-war average.

In 24 decades ending in 1909, non-irrigation land rents increased nearly 3.5 fold and irrigated land rents 4.75 fold. Disregarding the vast fluctuations of the next two decades, one is tempted to point to changes over 26 decades as increase of 4.8 fold for non-irrigated land rent and 7.0 fold for irrigated land rent.

Irrigated land prices during 9 decades, 1823–1913, increased 2.3 fold. Taking the 10 decades ended in 1929, the increase was about 3.0 fold. The rent on irrigated lands for the 9 decades, 1823–1913, increased only 1.6 fold and for the 10 decades ended in 1929, increased 2.8 fold. In other words, rents and land prices have increased in greater consonance across the century ended in 1929 than during the 90 years ended in 1913. On either basis land prices had advanced more than land rents. In other words, there has been more value in the past quarter century for each unit of rent than a century before.

More intensive operations were doubtless concentrated on the irrigated lands than on the non-irrigated lands. Productive capacity of irrigated land may have been actually increased more than that of non-irrigated land, structural improvements having possibly contributed to the realization of the potentialities of the

portions of the farms brought into cultivation as irrigation progressed, and responses to fertilizers having been possibly made more effective because of the superior quality of the alluvium.

Upward trend in rents for university land from about 1665 and for the hospital lands from 1670, or possibly from an earlier date, if the figures were available, may suggest pressure of population on available supply of land in the Italian peninsula. Pressure to induce the food and fiber supply of Italian people to come from the peninsula could scarcely have been kept equal from generation to generation, but is probably as marked now as in any period of advanced standards of consumption. Just what allowance to make for changed power of the gold lira to command human effort in exchange for itself in the Italian peninsula is a problem which may be passed over now, but an answer to it might tend either to enhance or to minimize the appearance of an approximation to a geometrial progression in the land rents and even in the land prices from one-half century or century to the next.

TAX REVERTED LANDS IN THE LAKE STATES

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Ownership of a vast new domain of approximately twenty million acres of tax delinquent lands in the Lake States cutover area has passed or is now passing to the States of Michigan and Minnesota, and to the Counties in Wisconsin.

First, what are the principal causes of tax delinquency and the subsequent reversion?

In the cut-over area the land has been stripped of its timber, exploited, and abused in numerous ways so that it cannot now bear its share of the costs of local and state government. It is being abandoned because it will not yield a return sufficient for the maintenance of agriculture and has been rendered practically worthless through exploitation and destruction of its forests and wild life.

Some reverting lands, both rural and urban, are not valueless in private ownership but are tax-delinquent for such other reasons as over-capitalization, economic distress of individual owners, and excessive tax levies. A large part of these lands should and will return to private ownership through re-sale by the state, but accompanying re-sale many institutional adjustments are necessary.

Second, how do lands revert to the sovereign, and does good and sufficient title pass to the State?

In Wisconsin, taxes become delinquent on the fourth Monday of April in the year following the levy. The sale is ordinarily held on the second Tuesday in June following the date of delinquency, and is preceded by publication of the delinquent list and the notice of sale. Lands otherwise undisposed of at the sale are bid off to the county. Individuals or the county receive a certificate providing for the issuing of a deed five years from the date thereof, unless the land is sooner redeemed. When this certificate of sale is held by a county, subsequent delinquencies may be added without the usual publication and sale. At least six months and not more than ten months before the expiration of the redemption period, the County Treasurer publishes a list of land subject to redemption along with a statement of the amount required to redeem, calculated to the last day of the period. There are also certain requirements as to notification of the owner, mortgagees or other parties having an interest of record in the land. When all the requirements have been met, the county clerk issues a deed to the individual certificate holder or to the county, as the case may be. A certificate

holder has the option of foreclosing his lien as though it were an ordinary real estate mortgage in lieu of accepting the usual tax deed.

The essential steps in the administration of tax collection in Minnesota are not greatly different from those in Wisconsin up to the time when the taxes become delinquent. This occurs on the first day of January of the second year following the date of the levy. Collection is enforced by a court action begun after the county auditor files a list of delinquent taxes with the clerk of the district court by the publication of the list. Within twenty days after the last date of publication, an answer may be filed and if that is done, the court will hold a hearing to determine its merits. Otherwise, judgment is entered and a sale is ordered. This sale is regularly held in May after the tax becomes delinquent, and it is preceded by a second notice showing lands upon which judgment has been entered and which have not been redeemed.

When there are no other bidders at the sale, the lands are bid off to the State instead of to the County, as in Wisconsin. The provisions of the statute pertaining to the certificate of sale are, however similar to those in Wisconsin, and there is a 5-year redemption period. All lands are subject to re-sale for subsequent delinquencies during the redemption period, even though the certificate of sale is held by the State. At the end of the five years, owners are given a 60-day notice of the expiration of the redemption period after which the deed is issued. Forfeited lands held by the State are held in trust for the tax districts, with the exception of certain park and forest lands.

Michigan reversion procedure differs in several important respects from either that of Wisconsin or that of Minnesota. Taxes are levied in the spring of the year, become a lien on the first of December, and are delinquent on the first of March in the following year. Fourteen months later, the tax sale is held. Prior to the sale, a chancery action is begun in the circuit court by petition of the State Auditor General filed with the county clerk. This petition prays a decree in favor of the State against the delinquent lands. When the judge of the court receives it, he prepares an order setting a time for hearing and the petition and order are published. Owners are notified by mail at least thirty days before the sale. At the sale each parcel is offered twice and if there is no other bid, the land is bid to the State. A tax bid certificate is issued to purchasers—including the State. The sale stands confirmed unless objections are filed within eight days from the date of the filing of the Treasurer's report of the sale with the clerk of the court. The redemption period is fixed at 18 months, at the end of which period the circuit court enters a decree transferring title of the unredeemed

lands to the State. Within thirty days from the date of this decree the Auditor General is required to make out the deed. Thus the reversion procedure has been made to work automatically in Michigan on the basis of a well defined court action.

Title to land under existing statutes passes to the State in 33 months in Michigan; to the County in 65 months in Wisconsin; and to the State in 64 months in Minnesota. During these periods, the land, is ordinarily not being used or developed privately and cannot be used or developed for public benefit because title has not passed to the state. At first thought, it seems exceedingly wasteful that thousands upon thousands of acres must receive such treatment. However, 90% or more of all tax delinquent lands in the Lake States are cut-over, wild lands. Except for a relatively small acreage, intensive development is not undertaken even after title vests in the states. The protection of these lands from fire and the enforcement of game laws and other regulations is essentially the same during the period between delinquency and state ownership as it is after ownership passes to the State.

However, it is desirable that the period between the time taxes become delinquent and the actual passing of title to the State should be shortened as much as possible by amendment to present legislation within the limitations placed on such legislation by the constitution as interpreted by Supreme Courts in the respective States.

In this connection, it must be recognized that all tax reversion statutes were originally designed to enforce collection of taxes under the fundamental principle of common law in favor of keeping lands in private ownership. This principle is so firmly established through long precedent that it offers one of the reasons for the reluctance of legislatures to make reversion of lands for tax delinquency easier and more certain. Likewise, this ancient principle of law explains the attitude of the courts in being disposed to hold unconstitutional legislative enactments which would tend to speed up the process by which lands revert to the sovereign for nonpayment of taxes.

However, because the statutes are now actually causing reversion of lands to the State instead of enforcing collection of the taxes, it is important that such reversion be made to pass good and sufficient title.

Public funds should not be expended for development of these reverted lands unless good title is vested in the State. Further, a considerable acreage of the lands reverting to the states are suitable for agricultural development and should be returned to private ownership through sale. If the lands which are reverting for taxes

are good agricultural lands, whether developed or undeveloped, the State has a definite responsibility in the sale of these lands to insure good title to the purchaser thereof. The State of Michigan recognizes this problem and has provided in its legislation that all lands in certain counties in the lower half of Michigan shall be offered at public auction and again passed to private ownership. The Michigan statute has been repeatedly confirmed by the State Supreme Court. The Wisconsin statute has been repeatedly upheld by the State Supreme Court, but it is much more difficult to comply with the statute there than in Michigan. Michigan titles are based on court decrees, whereas the Wisconsin titles are based on local county official action in conforming to the statute and issuing deeds.

The present Minnesota tax reversion statute conflicts with several prior statutes which have not been repealed, and its validity is now before the State Supreme Court on appeal from a lower court. The statute has been tested twice recently in the lower courts, with opposite results. Until the legislature in Minnesota repeals the conflicting statutes relating to tax reversion and the present statute is held to be constitutional by the State Supreme Court, there can be no certainty that valid title to tax delinquent land passes to the State of Minnesota.

Third, how are these lands being administered? In Michigan and Minnesota, the Department of Conservation is the administering agency. In Wisconsin the land is administered jointly by the County and the State Department of Conservation. The administration of tax reverted land by States has the obvious advantage of availability of more funds for administration purposes, and tends to bring about a more uniform policy. Administration by Counties has the advantage of stimulating local interest and participation. However, State ownership is less likely to result in a policy of the sale of lands which will again become delinquent and revert.

LAND USE PROBLEMS IN MINNESOTA

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Land use problems are commonly defined as maladjustments between land resources and population. These maladjustments may be the result of attempts to use the land for purposes for which it is not adapted, or of attempts to utilize it by methods which do not fit the specific conditions under which they are applied.

Two factors make for a great variety in the land use problems found in Minnesota. One is the wide range in soil types, topographic features, and climatic conditions found in the state and which give rise to a wide variety of land resources. The other is the comparative youth of the state. It has not been settled long enough to have permitted a proper evaluation of its varied resources or a proper adjustment of its population to them.

The state was settled rapidly, and during a period in which it was generally thought that all possible land would be needed for agricultural purposes. The timber resources, which constituted the greatest original resource of approximately one third of the state, were rapidly exploited, with little or no provision being made to maintain or replace them. Much of the population which had been attracted to the region by the timber industry was left stranded when these resources were exhausted and the timber operators moved out. However, at the time, this was not considered as a cause for alarm as it was expected that agriculture would immediately develop and take care of the population. The land speculator followed the timber operator, or, as was frequently the case, the timber operator became a land speculator. The settler followed the lumber jack, or the lumber jack became a settler, frequently with little regard to the agricultural productivity of the soil upon which he settled.

Little attention was paid to the recreational resources. While the lakes and streams could not be obliterated or removed, their beauty and their value were greatly decreased by the destruction of their forested shore lines and their water sheds. The value of *these* resources and the contributions which they can make to the welfare of a community has come to be appreciated only within recent years.

Shortly after the turn of the century an extensive drainage program was started, and by 1917 millions of acres of swamp land had been drained, ostensibly to provide needed agricultural land. Actually, this drainage program added very little to the agricul-

tural area of the state as most of the drained lands were not suitable for farming even after drainage. But this drainage program did markedly reduce the value of large areas of swamp lands for conservation purposes; it decreased the wild life and recreational resources of the areas; it increased the fire hazards over millions of acres; it necessitated tax levies which have resulted in the forfeiture of thousands of acres to public ownership; and it reduced several of the counties, which issued the drainage bonds, to such financial condition that they have been saved from bankruptcy only by the assumption of these bonds by the State.

The essential point is that regardless of the lack of agricultural possibilities or the natural adaptabilities of the resources for other uses, an attempt was made to fit every area into an agricultural pattern. Naturally, many mistakes were made and sufficient time has not yet elapsed to have brought about a natural rectification of them. The attempts to utilize too much of the land for agricultural purposes have been the basic cause of practically all of the major land use problems of the state.

The recognition of the cause of the problems indicates the direction which must be taken to solve them. In general, this direction must be towards more extensive uses of the land. Frequently, perhaps usually, such changes must be accompanied by a reduction in population. Even when it is generally recognized that steps in this direction are desirable or necessary it is still difficult to make them effective, because such movements are a reversal of generally accepted ideas of progress. We have been practicing the techniques of expansion from the time the country was first settled. We know how to transfer the land from public domain to private ownership; how to remove the forests and develop farms; how to set up local units of government; how to provide roads, schools and other public facilities. But we do not have well developed techniques for contraction. We do not have workable procedures for keeping settlement out of an area or for relocating settlers now living in undesirable areas; for consolidating or abandoning unnecessary local governmental units; for adjusting excessive public indebtedness which was incurred during periods of expansion but never paid; or even for transferring the tax forfeited lands back to public ownership. In short, we do not know how to "back up." To solve many of our land use problems we need reverse gears on our economic and legal machinery.

While the land use problems of the state have a common origin and are closely inter-related, they cannot be treated as a single problem. Progress must be made by treating the specific and more or less isolated phases of the larger problem as these become suffi-

ciently conspicuous and widespread to arouse public interest in them. The greatest progress toward effecting desirable land use adjustments can be made in those areas in which specific problems are now serious enough to direct public attention to them.

In Minnesota there are three such areas at the present time. These are (1) the cut-over region comprising approximately the northern and northeastern one-third of the state, (2) a rough area adjacent to the Mississippi River and its tributaries in the southeastern section of the state and (3) the Red River Valley. Another area, which is less generally recognized as a potential source of land use problems, is one comprising parts of four counties north and west of Minneapolis and extending along the Mississippi River to the border of the cut-over region. This is an area of light sandy soils, low natural productivity, and subject to drought and serious wind erosion. While the area is well settled at present, the farms as a whole are gradually deteriorating. Eventually, much of the land should be in permanent cover and considerable shifting of the population appears inevitable. However, because changes in this area are coming about gradually and because conditions are not yet critical, little public consideration has been given to it. Other areas present more urgent problems.

Problems in The Red River Valley

The major problem in this area is that of water conservation, chiefly for the benefit of the towns and cities located along the Red River or its tributaries. The principal water problem is the development of a dependable flow in the streams during the dry months of the year. Stream flow, except during the spring, depends largely on the issuance of ground water at the upper parts of the streams. The conservation and storage of water on the agricultural and forest land are important to the development of the towns and cities which depend upon the streams for their water supply. Since 1922 the flow in these streams has been below average. At some points the streams have been dry for considerable periods.

The total run-off yield, even in years of normal precipitation, is barely sufficient to supply the needs of the area for agricultural, municipal and industrial purposes. The problem is to scrupulously save the water yielded by precipitation and to conserve and regulate it to serve as many needs and useful purposes as possible. This means, the storage of water in the reservoirs or the lakes, which form the head-waters of the streams.

Since the Red River drains parts of North Dakota and South Dakota, as well as parts of Minnesota, and also because some of the largest cities affected, such as Fargo and Grand Forks are in North

Dakota, this problem of water control is properly an inter-state problem. However, it is of particular interest to Minnesota because most of the important sources of water supply are on the Minnesota side of the river. An Inter-state Committee has been appointed and is now working on this problem.

Problems in the Southeastern Minnesota Area

This area covers parts of six counties in the extreme southeastern corner of the state. The topography varies from gently rolling uplands to rough broken areas characterized by high and often precipitous limestone bluffs along the streams. Most of the rough land, that too steep to have been plowed, is wooded, although the hillsides are gradually being denuded.

The major land use problems are flood control and soil erosion, with the latter being more important because it is more wide spread. Sheet erosion is common over practically all the area. Gully erosion is frequent and serious, due both to the topography and to the character of rainfall, much of which comes as torrential storms during the summer months. Serious damage by floods is limited largely to the lower portions of the valleys, whether of stream beds or dry runs. The principal streams drain large areas extending for fifty miles or more back from the Mississippi River. They enter the Mississippi through relatively narrow but long valleys cut through the bluffs. Following heavy rains, the water which has fallen over a large area pours down these narrow valleys, and serious losses to the farmers living in them are of frequent occurrence.

Practically all the land in the area is privately owned and is now in farms, and in all probability will continue to be farmed. The trend is toward larger farm units, particularly so in the rougher sections. However, there are still a few farms of eighty acres or less even in these areas. Such farms are too small to make an economic unit and public assistance might well be extended to aid farmers now living on them to relocate elsewhere. The resale of such units to adjoining farmers would aid the latter to make necessary shifts toward a more extensive type of agriculture. Also, public purchase and ownership of some of the steep broken lands along the streams and dry runs in order to keep them permanently in forest cover is probably desirable. Most of the hillsides are pastured at present and are subject to considerable erosion even though wooded.

The present activities of the Soil Erosion Service in the state are concentrated almost entirely in this area. One Soil Conservation District has been established; others are contemplated. Such districts probably offer the most feasible method of solving the problems of this area.

Problems of the Cut-Over Region

The most wide spread land use maladjustments in the state are found in the cut-over areas. These maladjustments are apparent in the many social and economic problems which are characteristic of the entire region. These problems include:

1. Millions of acres of cut-over land which produce little or no income to their owners, or to the public revenues in the form of taxes, and for which no constructive program of use has been formulated.
2. Excessive indebtedness of Local governmental units. In many instances the outstanding indebtedness exceeds the valuation and the units are virtually bankrupt. Carrying charges on the indebtedness alone necessitate tax rates which neither farm nor non-farm lands can pay.
3. Low farm incomes, even to established settlers.
   These low incomes may be due to:
   a. Low productivity of the land
   b. The small size of the farm business, which in turn, is usually due to the small number of cultivated acres, or
   c. To the exhaustion of sources of outside income.
4. Isolated rural settlement with its attendant high costs for roads, schools and other public services.
5. Depletion of natural resources such as timber stands, without adequate provision having been made to maintain or replace them.
6. High percentages of the rural population dependent upon public relief agencies.
7. The forfeiture of approximately seven million acres of land to public ownership because of non-payment of taxes.

As previously stated, these problems have developed as a result of the past land policy which assumed that all possible land would be needed for agricultural purposes, and that all land was, at least potentially, agricultural land capable of supporting agricultural communities and the public services which such communities demand. There is now ample evidence that this policy is no longer tenable. The first step in correcting these problems must be the formulation of land use policies and programs based upon the experience of the past and the best possible estimates of future land needs. This means: first policies which recognize the fact that there are some lands which either are not suitable for agriculture or are not needed for agricultural purposes at the present time; and second: definite and long time programs which will promote

the use of such lands for other purposes instead of allowing them to remain idle and unproductive as they are at present. Such programs should include:

1. A land use classification to determine the areas which may best be devoted to agriculture and those which, in the interest of the general public, should be devoted to other uses. The county planning program now being initiated by the Federal and State Extension Divisions presents an excellent opportunity to secure the type of classification needed. In Minnesota, approximately two million acres have already been so classified under this program.
2. A rural zoning program to make classifications effective.
3. A settler relocation program to supplement rural zoning.
4. Constructive action by the County Boards in their handling of tax forfeited lands. At the present time approximately seven million acres of land are subject to reversion to public ownership because of non-payment of taxes for the 1930 or prior levies. The power to direct the future use of these lands is vested primarily in the County Boards. The County Boards may sell these lands outright; they may sell them subject to conditions which will limit their use or which will limit the amount of public money which will be spent for the benefit of the lands; or they may withhold these lands from sale. Thus, the County Boards have power to virtually zone these lands. When it is remembered that more than ninety per cent of the tax forfeited lands are undeveloped, cut-over lands, the importance of the action taken by the County Boards in dealing with them is evident.

In view of present serious conditions it might be thought that need for changes in policy would be evident to all, and that it would be a simple matter to initiate and carry on constructive, forward looking programs. However, such is not the case. There are two principal obstacles to constructive land use programs in Minnesota at this time. The first is the pressure upon local taxing units for current income. The need for immediate revenue is so great that long time benefits are sacrificed for present expediency. As a practical matter, it appears that one of the necessary parts of a workable land use program is a feasible method of extending state aid to the local governmental units. The other obstacle is a lack of appreciation on the part of the local people as to the basic causes of present difficulties. Successful constructive programs are

possible only as they are understood by, and have the support of, the local people. Certainly in Minnesota, a sustained program of education must be an essential part of a successful land use program.

LAND USE PROBLEMS IN MICHIGAN

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Michigan, like the other Lake States, has its land problems, and these problems in the respective states are in many ways quite similar. The non-agricultural land in Michigan constitutes about 20,000,000 acres or nearly 60 per cent of the area of the entire state, and the bulk of this type of land lies in the northern counties. In this northern portion of the state only about one-fifth of the land is in farms, and this farm acreage has varied only slightly during the last twenty-five years, so that it may be reasonably expected that over 15,000,000 of acres in these northern districts will remain indefinitely or permanently "wild". Of the original forest land of 35,500,000 acres, only about 2,000,000 acres remain in merchantable virgin forest with the resultant countless numbers of abandoned and stranded towns and communities.

With a tax reversion law in operation since 1893, several millions of acres of cut-over land have passed to the state, and extensive tracts of such non-agricultural acreage are being retained in public ownership and are being managed by the State Conservation Department and federal agencies, not only for timber production but also for hunting, fishing and other recreational use. Several million acres more are due to revert to the state shortly, merely because the private owners see no chance of realizing a revenue equal to or exceeding the carrying charges.

The suspension of mining activity in the western counties of the Upper Peninsula has caused even greater distress. The employees in the copper mines have dropped from 16,000 to less than 2,000, and the annual production of iron ore from a peak of 18,000,000 tons to 2,500,000 tons. As a result, the tax base for that section of the state has decreased to the point where it is impossible to raise sufficient funds for education, public health, relief, roads and other necessary social facilities ordinarily provided by local government. Subsidies of many sorts from state funds are required in order that townships and school districts may continue to exist, which raises many questions regarding public finances, rural land zoning, consolidation of uneconomic school districts and townships, and proper use of these vast land areas, a large portion of which are not now productive in any manner.

It would appear with advances in the technologies, and voluntary limitations of population, the total of the lands worked intensively for the production of crops may shrink indefinitely, that intensive urban industrialization may concentrate indefinitely be-

yond anything yet known, and that the bulk of our acreage will be worked only extensively, if at all.

There is also the vast accumulations of tax-reverted or delinquent lands in the cut-over districts. What is their proper or possible disposition? Let me state a hypothetical case:

Suppose that in 1870 that we were sitting here as an official advisory Board to Congress and we are gifted with powers of foresight so that we can see in advance what has happened—the very rapid "opening" of the prairie states as the railroads came, and the correspondingly rapid depletion—devastation—of the Lake States forests to supply pine lumber construction material, cedar for railroad ties and fence posts and so forth. Had not the enormous quantities of high-grade forest products been readily available at very low prices, the very rich lands of the Great Valley States could not have developed as they did develop.

The Committee must decide on what we deem to be the best national land use policy. Shall we turn it all loose, to come out the way it has turned out, with the Lake States and other forest regions slashed and burned into "devastations" and with tens of millions of acres abandoned by the private owners but with the Central Valleys all settled and "in use"; or see the chance for all that, but seeing also the price which must be paid, shall we shake our heads and decide that it will be better to slow it all down for a century or so . . . enough so that no forest shall be cut into except as it may be kept in continuously productive condition, be worked on a sustained-yield basis, and according to the best principles of forestry technic? Much slower opening and development of the Middle West farm land, and the Lake States forests maintained in continuously productive condition, or slash and burn the forests into junk, and in exchange get what we today have in the corn-belt region?

As put, that question wasn't fair or really proper, but perhaps it did bring out what I take to be a primary proposition which underlies all these land-using policy questions, namely: there is a price which must be paid in connection with any policy or practice.

If land-use policies and practices are to become decently and consistently sound, then the core of all these questions must evidently involve a sober appraisal and balancing of the assets and the liabilities which are due to be set up by whatever action or non-action may be under consideration. The asset and the liability phases are evidently inherent and inseparable. It is perfectly obvious and inevitable, for instance, that a new creamery or beet-sugar plant will tend to benefit and enhance neighboring agricultural interests and that this is normally to be desired; but it is

also obvious and inevitable that plants of this sort will have and must dispose of waste products. The easiest manner of disposal is to waste them into nearby flowing water. But if that is done the biochemical results may be quite accurately anticipated and the deleterious effect on down-stream interests in that water must be considered as a liability to be compared with the asset.

Or, here is good farm land in stumps and unused, and here are people who want to use it. By vast precedent it is desirable that such land should be so used. But if the combination is such that isolated back-woods settlements result, then perhaps it will cost more to maintain the schools, roads, etc., than such settlements are really worth—in which case there is more of liability than of asset, and somebody must somehow make good the deficit.

Or, here is tax-reverted idle or loafing timber land, unfit for farming. It once grew splendid timber—can grow it again. Public agencies are available to absorb that land into State or National forests. If they do they will expect to reforest it to pine, and having done that they will expect to keep the plantations protected from fire, from blister-rust, from trespass, and otherwise continue to administer it indefinitely so as to keep it in continuously productive condition. This, they say, will presently result in large and permanent economic and social assets, direct and indirect, tangible and intangible, and that will quite certainly be so.

But it will also be so that once the foresters take over, thereafter and for indefinite decades, they will of necessity require fresh appropriations of tax funds to maintain their operations pending such time as the new forests may become merchantable and perhaps more or less self-sustaining. And it will be inevitable that some of the new forests will suffer from drought, fire, storm, disease, and pests, and perhaps such shrinkages may be great, or even sufficient to void or offset much or all of the accumulated investments to date.

Everyone agrees that sociologically it is very desirable to manage the remaining virgin hardwood forest stands in the Upper Peninsula on a sustained yield basis, thereby stabilizing the communities and providing continuous work for the inhabitants, instead of liquidating the holdings by clear cutting as rapidly as possible, as the private owners now are forced to do. But are the social benefits to be derived worth the cost?

Should the state encourage the continuance of small uneconomic local governmental units and school districts by subsidies of one kind and another, such as the annual tax of 10 cents per acre on state owned land, which tax is based solely on the amount of state acreage and not the needs of each local unit?

And again, should the thousands of platted subdivision lots in the metropolitan areas which are due to revert to the state and for which there is no need for residential or business purposes, be "pushed" onto the market as soon as the state gains title, as is now required by statute? Or should certain of these surplus subdivisions be vacated and the land retained for some form of public use or possibly returned to agricultural purposes?

That is to say, that if and as the new assets are to be created they must come with linked-in liabilities, tangible and intangible, economic and social. Some of both assets and liabilities will be liquid, and some will have to be indefinitely frozen, and for almost every large "problem" there must be some manner of balancing as between current and deferred advantages, as well as between current and deferred liabilities.

There must be such a balancing if there is to be an increasingly intelligent and deliberate effort, by increasingly competent agencies, to evaluate such propositions in connection with land-use action-programs. And that, I take it, is what we must be trying for: i.e., such data and analysis as may let us correctly chart the curves and "understand" what has been and is happening, and why it has occurred; what the major variables of these affairs really are, and how to project the curves into the coming years so as to increasingly engineer—rather than tinker.

WAYS OF REDUCING COSTS OF DISTRIBUTING MILK IN NEW YORK

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The average spread between retail prices and prices returned to farmers for all milk distributed for home consumption in New York City was practically the same in 1938 as in 1929 (table 1). This is the net result of changes tending to increase the spread, as well as those tending to reduce it. Decreases in proportion of Grade A milk sold, a shift from retail route to store distribution, lower costs of plant operation and transportation, and smaller profits of distributors have worked in the direction of a smaller spread. Elimination of store sales of dipped milk, the introduction of Vitamin D milk and paper containers, and higher costs for retail delivery have had the effect of offsetting the savings from the other changes mentioned.

TABLE 1. CHANGES IN GROSS SPREAD ON MILK FOR HOME CONSUMPTION, NEW YORK CITY—DECEMBER 1929 TO DECEMBER 1938

Item	Approximate percentage of total volume		Gross spread, cents per quart	
	1929	1938	1929	1938
Grade A, retail:				
Regular	22.0	5.5	10.4	10.1
Vitamin D		10.0		11.1
Grade B, retail:				
Regular	35.0	19.5	8.4	8.1
Vitamin D		12.0		9.1
Grade B, at stores:				
Advertised brands	8.0	7.0	8.4	7.4
Other brands:				
Glass bottles		29.0		5.4
Paper containers		16.0		6.4
Bulk	35.0		4.4	
Grade B, at welfare depots		1.0		2.4
All milk*	100.0	100.0	7.44	7.47

* Excluding Certified milk, which constitutes less than 1 per cent of the total volume.

Changes in Price Spread on Grade B Retail Milk

Grade B milk delivered on retail routes is commonly thought of as the major item in the milk dealer's business. In New York City this type of trade now amounts to less than one-third the total volume. A substantial part of this milk is fortified with Vitamin D and sells for 1 cent more a quart. However, the changes

in prices and spread on this one class of milk are typical of those for all the milk that is distributed on retail routes.

At present the gross spread between retail price and dealers' buying price at country stations for the regular Grade B milk delivered to the door-step is 8.1 cents a quart. This is 0.3 cent a quart, or 4 per cent less than the average spread for the years 1925–29. Near the bottom of the depression, in 1933, the spread was reduced to 7 cents, but most of that saving has been wiped out by advances in the past five years.

Items in Spread on Grade B Retail Milk

The present retail price for the regular Grade B retail milk in New York is 13.75 cents a quart. Out of this the farmers get 5.6 and the distributors' spread is 8.1. That amount covers the expenses of all marketing and transportation, beginning at the country plant and extending to the customer's door-step. It also includes the distributors' profit. By far the most expensive item is delivery. This, together with selling and collection expense, comes to about 5.6 cents a quart, or 70 per cent of the total. It costs practically as much to get a bottle of Grade B milk from the milk plant in the city to the consumer's door as the farmer receives for the feed, labor, capital, and other expenses incurred in producing the milk and delivering it to the country plant. Under present conditions, the distributors' profit on this section of the business is not more than one-fourth cent a quart, which is well below the normal rate.

Compared with December 1929, the current retail price of Grade B retail milk in New York is 2.25 cents lower; the price paid by the dealers is down 0.9 cent; and the gross spread has been reduced 0.35 cent a quart. The costs of country plant operation, freight, city plant, and administrative expenses have been reduced a total of 1 cent a quart, but most of this has been offset by the jump of 0.8 cent in delivery expenses.

Changes in Costs

Substantial economies in country plant operation and in transportation have resulted from the adoption of tank cars and tank trucks for milk. This saves the handling and washing of cans, eliminates the use of ice in transportation, and a certain amount of waste. Another important factor making for lower country plant costs has been the widespread consolidation of plants with larger volume and greater efficiency at those remaining. Somewhat lower wage rates also have played a part.

In addition to the savings from shipping milk in tanks, the costs of rail transportation have been lowered by a reduced scale of rates and by shipping a much larger proportion of the milk in carload quantities. In the past ten years milk brought to the New York market by truck has increased from less than 10 per cent to more that 50 per cent of the total volume. Tank trucks have provided cheaper transportation from plants that are not well situated for shipping by rail. Moreover, truck competition was mainly responsible for the reduction in railroad freight rates on milk. An important advantage of the trucks is their ability to move the milk direct to the city pasteurizing plants, most of which lack direct rail connections.

Costs at city pasteurizing plants have been lowered chiefly by installation of more automatic labor-saving equipment, and by concentrating the necessary operations at fewer plants with larger volume per plant. The transportation of milk in tanks rather than cans also economizes on the costs of receiving milk at the city plants. At the depth of the depression wages of plant employees were reduced considerably but they have since been restored to approximately the level of 1929.

Between 1929 and 1932 costs of selling, delivering, and collecting for milk were substantially reduced by paying lower wages and commissions to the route salesmen or drivers. Since 1932, however, the cost of retail delivery of milk has increased strikingly. This change is due principally to two conditions, namely, higher compensation of drivers and smaller loads on the routes. The weekly earnings of drivers on retail milk routes in New York City have been higher in 1938 than in any previous year. On the other hand, more people are getting their milk at stores. It is estimated that the total volume distributed on retail routes has decreased about 20 per cent since 1929. It has been impossible to consolidate routes fast enough to prevent a decrease in loads. With fewer and longer routes, it will hardly be possible to restore loads to the former volumes, except by heroic adjustments such as delivery on alternate days or abandonment of retail delivery in those sections of the city where the loads are smallest.

Costs of Distribution through Stores

Prior to June 1933 the sale of loose or dipped milk at stores was permitted in New York City. There was a large volume of such business, particularly in the sections where family incomes are low. In December 1932, practically at the bottom of the depression, loose milk was priced to the consumer most generally at 7 cents a quart. The gross spread on this milk was about 4.3 cents a quart,

of which 1 cent went to the storekeeper. This was a cheap method of distribution, but for sanitary reasons it has been banned in practically all cities.

Distribution of bottled milk through stores in New York City did not develop much until the sale of loose milk was discontinued. By December 1934, this comparatively new type of distribution was going at a good rate. About this time, or a little earlier, the availability of bottled milk at stores at a lower price, and the necessity for reducing family expenditures began to cause a shift of patronage from retail routes to stores. At that time the prevailing price for Grade B milk at stores was 11 cents,[1] compared with 13 cents on retail routes. The gross spread was then 6.7 cents a quart on the milk sold through stores, and 7.6 cents on that delivered by retail routes. Of the total spread on store milk, about 2 cents a quart went to the storekeeper, and 2.15 cents was absorbed by the expenses of delivery to the store. Thus the entire distribution expense by the store method in the city was about 4.15 and by the retail route method around 5 cents a quart.

In the distribution of milk through stores, rising wage rates have had less effect on costs because more quarts are handled per man, and wages of store clerks are lower than those of milk delivery men. Furthermore, increasing volume in these channels has made for greater efficiency. Wholesale delivery costs have been reduced slightly, and storekeepers' margins also have been scaled down. The latter reduction was forced by the fixing of uniform prices to be paid by dealers for all fluid milk under Federal and State Marketing Orders which became effective September 1, 1938. Before that, much of the milk handled in stores had been purchased at surplus-milk prices, and keen competition among the dealers resulted in rather ample margins for the stores.

In December 1938, wholesale delivery costs plus the store margin in New York City were about 3.5 cents a quart, which compares with a cost of 5.6 cents on retail routes. The saving of 2 cents a quart is passed on to the consumer as compensation for performing a part of the delivery service herself. Actually the store price is about 2.75 cents lower than the door-step price. The difference, in addition to lower distribution cost, is explained by slightly lower butterfat content, less profit, and small savings on bottle loss and plant expense. It is impossible for many of the dealers to pay the required price for milk and deliver it to the stores at the current price of 9.5 cents a quart.

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[1] Except as otherwise indicated, all references to milk distributed through stores pertain to unadvertised brands.

Milk in Paper Containers

About ten years ago one of the large New York distributors began packaging milk in cone-style paper containers. For several years these containers were used by both the leading distributors, but without marked success. Later, a dairy plant in Philadelphia demonstrated that the same type of paper containers could be used to much greater advantage when plant, delivery systems, and sales efforts were adapted to this type of package exclusively. The idea was then adopted by one of the New York dealers, who set up an exclusive paper container operation in 1935. The sales outlets were mostly chain stores. A new square-type of container was used, and met with such ready acceptance by the public that other dealers were compelled to supply milk in paper containers also. Since then the quantity of milk distributed in paper containers has increased to about 30 per cent of the total volume of store sales.

When the distribution of milk in paper containers first got under way in volume, there was strenuous opposition from the smaller dealers and independent storekeepers. These groups prevailed upon the State milk authorities to fix a 1-cent higher price for milk sold in such containers. The theory was that the cost of putting out milk in paper containers was at least 1 cent more per quart. Obviously the cost per quart depended upon the type of trade, the volume of business, and the adaptation of plant and delivery equipment for using the new type of package. It was clear that improvements in equipment and method, together with increase in volume of milk sold in paper containers eventually would result in costs for that type of distribution that would compare more favorably with those for milk in glass bottles. At present the average costs of processing, packaging and delivery to stores are estimated at 3 cents a quart for milk in paper containers and at 2.8 cents for milk in glass bottles. In some instances, no doubt milk in paper containers is supplied more cheaply than competing dealers can supply it in glass bottles.

The paper containers, including the fibre cartons in which they are packed, cost about 1.35 a quart, whereas, the breakage and loss of glass bottles averages only 0.1 cent. The practice of charging a 3-cent deposit on glass bottles at the store keeps the loss of bottles at a minimum. However, the use of glass bottles involves the handling, sorting, and washing of empties, all of which is eliminated when paper containers are used. Delivery expense is much less with paper containers, especially where sales conditions permit heavy loading of the routes. Twelve quarts of milk in paper containers weigh less than half as much as the same quantity in glass bottles,

and take up much less space. The temperature of the milk in paper containers rises more slowly, and this simplifies the problem of refrigeration on the routes. All these things make it possible to use lighter trucks or to carry more milk in trucks of the same size. Trucks designed especially for delivering milk in paper containers are insulated, and no ice is used. It is said that the drivers handle 160 cases of milk in paper more willingly than 100 cases in glass. The drivers' union has fixed 100 cases of milk in glass bottles as the maximum for daily delivery by one man. So far no limit has been fixed for milk in paper containers.

Generally milk in paper containers is priced to the consumer 1 cent higher than milk in glass. About one-half the extra price goes to the storekeeper; one-fifth cent is taken for extra costs; and there is a difference of around 0.3 cent in the dealers' profit. The larger margin for storekeepers on milk in paper bottles is not justified by extra costs but rather is a temporary maladjustment. Milk in paper containers is much more satisfactory to the storekeeper since there are no deposit charges or empty bottles to bother with. It probably is only a question of time when milk in paper containers will be sold by stores in New York City at the same price as milk in glass bottles. This situation already prevails at a limited number of stores.

Maladjustment of Prices and Wages

Direct compensation of employees makes up just about half the total cost of processing and distributing milk. This fact is of special importance for the reason that wages often follow a different trend than prices of milk or other commodities. When commodity prices were severely deflated in 1929–33, wages of factory workers, milk wagon drivers, and other groups were reduced considerably, but much less in proportion than prices. During the period of recovery more particularly when the N.R.A. was inaugurated, wages were boosted sharply. Recently the prices received by New York farmers for milk have been about 15 per cent higher than the pre-war prices. In contrast, the weekly earnings of milk wagon drivers have been more than double the pre-war rate (figure 1). The great majority of consumers in New York City do not receive such wages. Many are partially or entirely unemployed. They are unable to pay the cost of services based upon wages that are twice as high as pre-war wages.

The maintenance of high wage rates for milk deliverymen in the face of curtailed buying power of consumers has greatly stimulated efforts to devise methods and equipment that will save labor, or use a less expensive type of labor. So far no progress has been made

toward increasing the efficiency of labor on retail routes. Retail deliverymen are handling fewer quarts per man than they did ten years ago or twenty years ago. The alternative was to distribute more of the milk through stores. More quarts are handled per man on the wholesale delivery routes, and less expensive labor is used in the stores. Besides, part of the delivery job is done by the consumers themselves.[2]

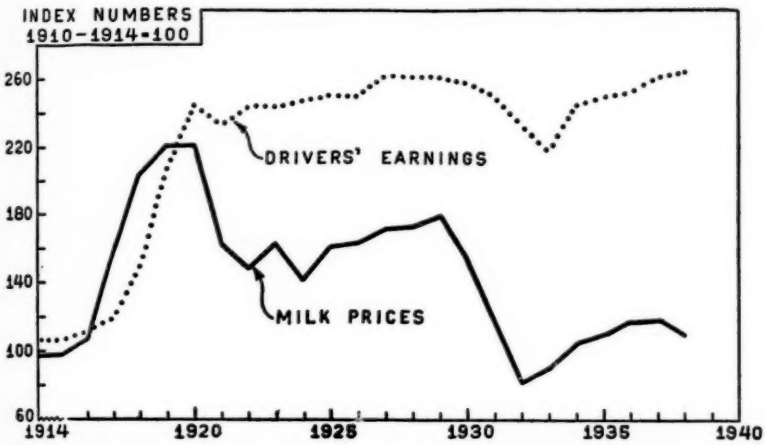

FIG. 1. TRENDS IN WEEKLY EARNINGS OF MILK WAGON DRIVERS IN NEW YORK CITY AND THE FARM PRICE OF MILK IN THE NEW YORK MILK SHED, 1914–1938.

Although fewer quarts of milk were handled per man, the compensation of milk deliverymen rose to a new high level in 1938. Weekly earnings of route men are more than two and one-half times the pre-war rate, whereas, the farm price of milk is only about 10 per cent above pre-war.

This maladjustment of prices and wages is not peculiar to the milk industry, but is a general situation. The farm price of all foods in the United States is now about 9 per cent below the pre-war prices. Retail prices are 25 to 30 per cent above the pre-war level, and costs of distribution 60 to 70 per cent above (figure 2). A basket of food that brought $1.00 at the farm in 1914 would now bring $.91. If the retail price of this food was $2.00 in 1914, it would now be around $2.50. If the cost of distribution was $1.00 in 1914, it would now be $1.70.

[2] These comments are applicable only to New York City and to other markets with similar conditions. The store system of milk distribution has not made much progress in the smaller cities.

Conclusions

Reduction of costs of milk distribution has depended very largely upon the use of new methods and equipment that require less labor. Thus economies in milk distribution tend to reduce employment. If the prices of basic commodities remain near the pre-war base, it will take a great many years to restore the normal

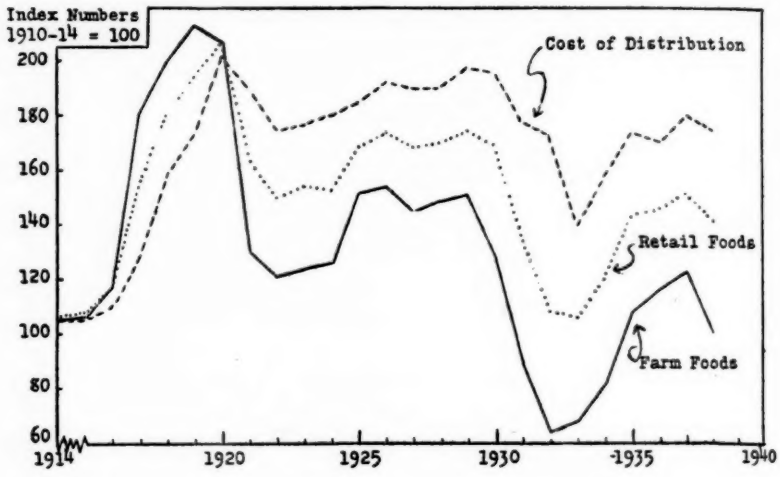

FIG. 2. CHANGES IN FARM PRICES, RETAIL PRICES AND DISTRIBUTION CHARGES FOR FOODS IN THE UNITED STATES (Data by F. A. Pearson)

When prices of raw materials go up, retail prices and charges for distribution lag. Likewise, when prices fall, retail prices and distribution charges remain high for a long period.

relationships between farm prices, retail prices, wages, and costs of distribution. Meanwhile, the pressure to curtail the use of high-priced labor will continue. In any case, the search for more efficient methods of distribution will go on, but the necessary adjustments would be much less painful if commodity prices should rise soon to 40 per cent or more above pre-war.

The Government can assist in promoting more efficient methods of distribution in two ways: first, by providing adequately for research and education in this field, and second, by seeing to it that fair opportunity is given for the exploitation of new methods and devices.

REDUCING COST OF DISTRIBUTING MILK IN CALIFORNIA[1]

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A great deal of popular misconception is current regarding the economies that can be made in fluid-milk distribution and regarding the ways such economies can be effected. Generalizations about overlapping routes and excessive advertising costs tend to confuse rather than clarify the issue, because such generalizations overlook the fact that certain types of operation are responsible usually for only a relatively small proportion of the total expenses of distributing milk. For example, the advertising expenditures of most distributors usually account for considerably less than one-quarter of a cent a quart of milk. Attention should be focused on rationalization of the milk-distribution industry as a whole rather than on one or two aspects or phases of distribution.

All things considered, the fluid-milk-distributing industries of our various cities are probably no more inefficient—in many ways perhaps more efficient—than most other industries involving processing and distribution. Because of the vital importance of the product handled, however, it is logical for the general public to expect that every effort should be made to eliminate inefficiencies in fluid-milk distribution, even though they may be tolerated in other industries. With this most enlightened distributors would agree.

Many people believe that inefficiency in distribution is only a passing phase; that competition will eventually eliminate inefficient practices and inefficient firms. A study of classical economic doctrines, which are supposed to characterize our American economy, indicates that among others, the functions and results of free competition are: (1) To insure that each industry is supplied, over a period of time, with sufficient (but not greatly more than sufficient) capital to meet the requirements of that industry for productive facilities and for current operating expenses, (2) that inefficient practices and firms will be eliminated gradually but surely, and (3) that the benefits of increased efficiency will be passed on to consumers in the form of lower prices.

Undoubtedly, if our economy were operating under conditions of relatively free competition, these results, beneficial from a general-welfare standpoint, would be forthcoming. Unfortunately, however, it is generally recognized that while the corrective forces

[1] Giannini Foundation Paper No. 76.

of fundamental economic laws still prevail in the long run, maladjustments and inefficiencies may persist for considerable periods of time, in spite of intensive competitive conditions. For example, in most California cities, there were in 1938 more plants distributing about the same or even a smaller total volume of milk than in 1929. Intensive competition since 1930 has not only failed to correct the situation, but has in many ways tended to result in the introduction of numerous expensive trade practices. The elimination of these practices alone would probably result in material reductions in the cost of distributing fluid milk.

Perhaps, if competition were permitted to run its course, conditions would eventually be corrected. Meanwhile, however, consumers would have to face the danger of periodic cessations of supply as a result of strikes. Equipment in plants would deteriorate rapidly, and high sanitary standards would be increasingly difficult to maintain. Furthermore, it is quite likely that after the situation has been corrected, the same influences would again be set in motion to cause another protracted collapse of milk-marketing structures. It is difficult to escape the conclusion that competition cannot be relied upon to insure efficiency in fluid-milk distribution unless radical changes are made in the functioning of our economy as a whole. Even then the question arises whether fluid-milk distribution, in the present advanced stage of development, is an industry that can operate efficiently under freely competitive conditions or is one that should be regarded as a natural monopoly. It is significant that in most of our larger markets the quality of the product, because of stringent health regulations, does not vary greatly as between distributors, that processing and delivery techniques are highly standardized, and that there are apparently definite benefits from large-scale operation.

Whatever conclusion is arrived at, it is apparent that some new technique must be developed to insure (1) that the fluid-milk-distributing industries of our various cities are not oversupplied with capital and (2) that these industries operate with the maximum efficiency measured in terms of unit costs of distribution. Possibly the milk-distribution industry can develop the necessary techniques on a voluntary basis with or without government assistance. If milk distributors are unable to cooperate for this purpose, we can look forward to more and more public regulation in the future.

The immediate and long-time value of investigational machinery is indicated by the experience of the University of California College of Agriculture, with state regulation of milk distribution under the Desmond Act. The circumstances leading to the participation

of the University in the analysis of distribution costs in the various markets of the state, and the nature of the investigations undertaken have been described elsewhere.[2] The remainder of this paper will be devoted (1) to an analysis of some of the facts with regard to distribution costs brought to light during the course of the survey, and (2) to an evaluation of this type of investigational machinery as a possible means for supplying the factual data for increasing the efficiency of distribution.

During the survey which began in July, 1937, and was suspended at the end of September, 1938, as a result of an adverse decision in the Superior Court of Los Angeles County,[3] detailed cost and investment data were obtained from nearly 200 processing distributors and producer-distributors and from several hundred retail grocery stores. Up to the end of September, 1938, analyses had been completed and reports made to the Director of Agriculture (the enforcement agent under the California Milk Stabilization Legislation) for eleven of the seventeen marketing areas of the state. Some work had also been done on the remaining markets. Included in these reports were summary analyses of the unit costs (by types of containers) of some one hundred processing distributors and producer-distributors and of about 300 retail stores. In each market the distributors included handled from 40 to 90 per cent of all milk distributed. The investigational work was handicapped by the fact that it was extremely difficult to obtain competent accountants and investigators with a knowledge of the milk-marketing industry. Also, because of the temporary nature of the work and the uncertainty of its duration, it was difficult to attract experienced accountants who were already employed.

Included in the 100 odd distributors whose costs were analyzed were plants with widely varying volumes of output, from less than 1,000 gallons to over 20,000 and even 30,000 gallons daily. A comparison for all 100 plants indicates that there is a general, but not clearly defined, inverse relation between output and unit processing costs. There were, however, several important exceptions both as regards plants in the same market and as between markets. Other factors which appear to influence unit costs are (1) percentage of capacity utilized (including number of shifts

[2] Tinley, J. M. *Public regulation of milk marketing in California.* 213 p. (See especially Chap. VII, VIII, and IX.) University of California Press, Berkeley, Calif. 1938.

Tinley, J. M. "Lessons from public control in milk marketing". JOURNAL OF FARM ECONOMICS XX (4): 807–822. 1938.

[3] This decision declared the Young Act, which established marketing areas and provided for the determination and enforcement of minimum prices to producers, to be unconstitutional because of indefiniteness and lack of adequate standards. The decision is being appealed to the California Supreme Court.

operated), (2) variations in wage rates, (3) original cost of operating assets, and (4) combination of enterprises. Of these the first two are probably the more important.

For instance, it was found that processing costs in the Los Angeles marketing area tended to run considerably below those in Oakland and San Francisco. In Los Angeles, plants generally had a much larger output than in Oakland and San Francisco. In addition most of the larger plants in Los Angeles operated on a 16-hour basis as compared with an 8-hour basis in the other two markets. In Los Angeles wage rates averaged from $10 to $20 below those in the two northern markets, but even if adjustments were made for differences in wage rates, unit costs of processing in Los Angeles would still average lower than in the other two markets. In many of the smaller markets, where wage rates were still lower than in Los Angeles, the unit costs of processing were considerably higher than in any of the three markets mentioned. In the smaller markets few, if any, of the distributors handled in excess of 2,000 gallons of milk daily. The importance of percentage of capacity utilized was shown in the case of a few distributors who were operating nearly to full capacity. The unit costs of these distributors were usually lower than those of other distributors with equal output, but operating well below full capacity.

The average number of packages carried per wholesale and retail route and the number of miles traveled appear to be the most important factors influencing unit costs of selling and delivery. In Los Angeles, wholesale routes averaged from 1,300 to 1,400 packages each,[4] in Oakland from 900 to 1,000 packages, and in San Francisco from 800 to 900. It is significant that wholesale-delivery costs averaged much lower in Los Angeles than in Oakland, and in the latter market somewhat lower than in San Francisco even after full adjustments were made for differences in wage rates. In the smaller markets wholesale-delivery costs per unit averaged nearly as high as unit costs for retail delivery because of the small number of packages delivered per wholesale stop.

On the other hand, unit costs for retail delivery averaged less in the Oakland market than in any other market in the state. In Oakland, retail trucks carried an average of 360 packages as compared with around 300 packages in San Francisco and 250 packages in Los Angeles and even smaller loads in other markets. In Oakland the average distance traveled per retail truck was 20 miles as compared with 40 miles in Los Angeles and even greater distances in smaller markets.

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[4] Each separate unit of a commodity carried was regarded as a separate package.

There appeared to be no clear relation between volume of output and unit costs for retail and wholesale delivery. This was due to the fact that several distributors have select, and to a considerable extent noncompetitive, market outlets; for example, distributors selling to their own system of chain stores or supermarkets. Many small retail distributors concentrate their operations in a relatively small and often select area where they are able to keep a close personal contact with consumers. With these exceptions, however, larger distributors appear to have lower unit costs than smaller distributors who cover a wide sales territory. It is reasonable to expect that distributors with a large volume will be able to secure a more efficient arrangement of routes than small distributors.

The data collected indicated clearly that wholesale volume in some markets had been unduly expanded at the expense of retail routes. In Los Angeles, for example, distributors in their scramble for store, restaurant, and hotel trade have granted liberal discounts, rebates, and concessions, which appear to have no relation whatsoever to the cost of service rendered. Part of these concessions were passed on to consumers in lower prices. As a result, wholesale volume has been expanded far beyond what could be considered a normal relation to retail sales. A few years ago retail routes carried considerably larger volumes than at present.

Advertising and sales-promotion costs per unit of large distributors were consistently higher than those for small dealers. This is to be expected because the small dealer tends to rely more largely upon personal solicitation. An analysis of the nature of advertising and sales-promotion expenses indicated that a considerable part of such costs is so much wasted effort as far as consumers, producers, and the distribution industry as a whole is concerned. The total volume of sales is not greatly affected—the only result is a transfer of patronage back and forth between distributors.

In this connection, attention should be drawn to the fact that advertising and sales-promotion expenses often do not indicate the full extent of this type of expense. Accounting convention usually requires that discounts be regarded as a deduction from gross sales. In most California markets distributors employ the discount method as one way, usually in conjunction with special salesmen and advertising, to gain or maintain customer patronage. Discounts (hidden or cash) allowed various customers may bear little or no relation to differences in selling and delivery costs. Discounts, which for some distributors run as high as 5 and 6 and even 10 per cent of gross sales, thus merely become one method of promoting trade and should in reality be grouped under selling and advertising costs. Furthermore, a detailed analysis of the assets of most large

distributors will disclose numerous items of investment in hospitals, clubs, department stores, and so on, which have never paid a return and which are of extremely doubtful market value. Such investments are frequently made in order to obtain the patronage of the clubs, hospitals, or business concerns. The patronage of these business concerns may have been lost to a competitor since the investment was first made. Investments of this kind should undoubtedly be regarded as a cost of sales promotion, either in the year they were made or written off over a period of years.

If discounts, rebates, and concessions and certain types of investments are regarded as a form of promotion expense, along with advertising and salesmen's salaries and traveling expenses, it is evident that public regulation of minimum prices can result in considerable economies.

General-office and administrative expenses appear to bear no very definite relation to size of business.

One glaring inefficiency appeared to exist in the Los Angeles market and to a lesser extent in the San Diego market. In attempting to meet competition, many of the larger distributors have undertaken to handle fluid milk of numerous fat tests and in numerous quart containers distinguishable by double and special types of caps and by special colored lettering on the bottles. This results in a slowing down of plant operations when fat tests are changed and when different types of bottles are used. A considerable amount of additional time is also required in sorting and handling. Delivery costs are also increased because a considerable number of unsold packages are carried. Much time of drivers is devoted to promoting the sale of these special packages. Undoubtedly plant and delivery costs in Los Angeles could be greatly decreased if fat tests and bottles could be more nearly standardized as in other major markets.

An interesting point is that since this survey was begun and reports to the Director of Agriculture were made available to the public, many distributors in different markets have taken steps to effect disclosed economies in their own operations. In addition to the decentralization of control above referred to, distributors in certain markets have exchanged routes, have consolidated routes, and have reduced the number of separate quart packages of milk handled. There can be little doubt but that the findings made in the survey have been a contributing though not the only factor in this development.

The most important single item of expense is for labor, which accounts for up to 40 per cent of wholesale and up to 60 per cent of retail expenses of distribution. This is important, for with the

unionization of plant and delivery labor in more and more cities in California, labor expenses per hour tend to become fixed expenses. As a result, the only way to lower labor expenses per unit of product sold is to increase the efficiency of labor. This is by no means an easy proposition for in some California markets labor unions have striven not only for higher wages and shorter working hours but also for the employment of the maximum number of persons. To this end they have opposed the introduction or extension of new methods of distribution (for example, store selling of milk), which may involve a decrease in the number of delivery men employed. They have also tended to oppose the reorganization of routes aiming at an increase in the number of packages carried per route.

This attitude of organized labor would appear to be a very serious limiting factor in any program for the rationalization of fluid-milk distribution. There can be no reasonable objection to the efforts of labor unions to obtain through collective action an equitable wage scale, but the attempts of labor organizations to oppose the introduction of more efficient methods of distribution, which may necessitate a decrease in the total number of employees in an industry, does not appear to be an enlightened public policy.

Included in the price of the final product received by the consumer is the cost of the raw product, fluid milk. This cost tends to vary with the percentage of milk fat included in a quart (or other size container) of milk. During recent years distributors in nearly all markets in California have tended to raise the fat content of fluid milk, using the argument that the percentage of fat is an indication of quality. Actually, however, the urge for a higher fat content appears to be a competitive one—the desire of distributors to use the cream-line as a visual representation of superior quality. There is considerable doubt as to whether fat content should be regarded as a constituent of quality, especially if consumption by adults is taken into consideration. Dietetic authorities unanimously recommend a higher consumption of milk by adults, but they usually stress the health values of solids, not fat. Adults do not need as many calories as the growing child. Isn't it reasonable to suppose that if per-capita consumption of milk by adults is to be increased, they must be supplied with a product more nearly fitting their needs? If so, greater stress must be placed in the future on providing adults with a low-fat milk. Possibly the more universal use of homogenization, which appears to improve the palatability of milk, will overcome the objection that a decrease in the fat content of milk adversely affects its smoothness and flavor. Another advantage in lowering the fat content of milk is that this

will permit some decrease in the price of milk to consumers. This alone may so stimulate consumption that in the aggregate the total volume of fat consumed may be actually greater than if the present trend toward a higher fat content continues.

During recent years there has been a very marked expansion in several milk markets in California of sales of milk to consumers in half-gallon and gallon containers. These are sold usually at the farm or at milk depots in urban areas. The price at which milk has been sold has usually been from 1 to 3 cents a quart lower than milk sold in single quart containers. The expansion of sales of milk in larger-than-quart containers indicates a strong consumer demand for this type of sale. Many of the established processing distributors in Los Angeles and in Sacramento have recently installed equipment for the packaging of milk in half-gallon and gallon containers. Unfortunately, as milk in these containers had been handled mainly by producer-distributors who keep very inadequate records, it was not possible to obtain any reliable data on the cost of selling milk in this manner. Furthermore, there is reason to believe that costs of distribution of milk in larger-than-quart containers are likely to be considerably different when this practice becomes widespread than when only a limited number of distributors handled them. Bottle expenses are likely to be greater. It is also probable that, if sales in half-gallon and gallon containers expand at the expense of quart and other smaller-sized containers, processing and delivery costs on the latter would be increased because of a less efficient use of the specialized equipment already installed to handle these smaller containers.[5]

In the case of investment, the survey indicated definitely that all the marketing areas were greatly oversupplied with processing and delivery facilities, large numbers of distributors operating well below 50 per cent of capacity. Moreover, few plants were organized to operate at optimum efficiency. But worse still large numbers of distributing firms appeared to be greatly overcapitalized. Even if the total volume of consumption in individual markets can be greatly increased in the near future as a result of a growth of population and a higher per-capita consumption, there would still be considerable overcapitalization of the milk-distribution industries of many of California markets. Although it is possible to determine and, if necessary, eliminate the effect upon unit costs of unused processing facilities, the overcapitalization of

[5] Within recent months several distributors have introduced paper containers for wholesale trade. Data are not yet available to indicate the cost involved in handling paper containers, nor on the indirect effect of handling a large volume of milk in this form on the costs of handling milk in glass containers.

milk-distributing industries (and of numerous other industries) has broad and serious economic effects. Much of this excess capitalization can never be expected to earn a return or, if it is to earn a return, it will be at the expense of consumers in the form of higher prices.

The investigation into milk-distribution costs in California leads to the conclusion that considerable economies and lower unit operating costs are possible in most milk markets in the state. If the numerous expensive trade practices could be eliminated, some reduction of unit costs could be forthcoming immediately and without any change in the number of distributors or distribution facilities. The more important reductions in unit operating costs, however, must await a rationalization of milk distribution.

In spite of the many legal and administrative problems involved, the weight of evidence leads to the conclusion that public control over the marketing of fluid milk will be continued and even extended to new states, and that there will be increased pressure for such control to encompass resale as well as producer prices. Inevitably greater consideration will have to be given to the possibilities of reducing costs of distributing fluid milk. Two important problems are involved: (1) How to determine potential immediate and long-time reductions in unit costs (or increased efficiency) and (2) how to induce (by legal sanction, cooperation, or otherwise) the milk-distribution industries in individual markets to adopt the necessary economies. Even if the state authority has no power, under existing control legislation, to force economies upon distributors, it would appear to be good public policy for distributors as a group to set up or support an agency to engage in efficiency research and to adopt all efficiency measures which can be followed on a voluntary basis. In fact the only way by which distributors can hope to forestall or avert public control over resale prices is to develop machinery on a voluntary basis which will aid in promoting increased efficiency in the distribution of fluid milk.

If an industry program of this type is to be successful, three conditions are necessary: first, a uniform detailed system of cost accounting, flexible enough to serve the needs of large, medium, and small distributors, would have to be developed. Such a system should be so designed as not to involve an undue increase in expense of record keeping. Second, a uniform system of cost allocation, flexible enough to meet varying conditions of operation, should be adopted. Third, a permanent, adequately financed research agency should be established. This agency should receive regular operating statements from each distributor as well as annual financial statements. It should be headed by a competent

economist and have included in its personnel a qualified appraisal engineer and trained accountants.

The main function of this agency, which should be apart from the control authority, would be to conduct continuing analyses, based on the cost and investment data supplied by individual distributors, of ways and means of increasing efficiency and reducing unit costs of distribution. It would undertake investigations at the request of the control authority, distributors, or on its own initiative. With comparable data collected from large and small distributors, from different markets, and covering a period of years, it would be in a position to determine with a great deal of accuracy effects upon unit costs of size of output, percentage of capacity utilized, variations in wage rates, combinations of enterprises, number of packages carried per route, and so on. It could even develop as an additional service a department to aid individual distributors in the keeping of records and the organization of their plants.

In conclusion it may be pointed out that the establishment of an independent research agency (probably on a state-wide basis) would be one way of overcoming an objection so frequently advanced against public control over milk marketing—namely, that public control would tend to freeze costs and the status quo. If this agency were properly organized, the stimulus arising from its findings would be an important offset to the alleged enervating effects of public control.

REDUCING COST OF DISTRIBUTING MILK IN MAINE

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This discussion of milk distribution costs is based on detailed records for 266 milk distributors.[1] These distributors sold milk in 10 Maine markets ranging in population from 97,833 in the Portland area to 6,433 in the Skowhegan area. The distributors interviewed comprised nearly one-half of all distributors and handled three-fourths of the total volume of sales in the 10 markets.

With the exception of four large dealers in the Portland market, most distributors in Maine handled a relatively small volume per distributor, producing most of their own milk supply. The distributors sold an average of only 232 quarts of milk per day.

Producer-distributors

In most Maine markets the producer-distributors handle a major part of the total volume of fluid milk sold. In the 10 areas the producer-distributors represented 92 per cent of the total number of milkmen and, in 7 of the 10 areas, they handled more than three-fourths of the total fluid milk.

The producer-distributor, although at some disadvantage because of less efficiency in some items of cost, does have several distinct advantages not enjoyed by the larger distributors. First the producer-distributors achieve a more complete control of supply with a minimum of surplus milk. The smaller distributors carried an average of only 10 per cent surplus milk which did not show appreciable seasonal variation and thus was adapted for use in meeting the local demand for fluid cream. The four large dealers in the Portland market carried an average of 20 per cent surplus with a seasonal variation ranging from 15 to 35 per cent.[2] By carrying a relatively small proportion of surplus milk, the producer-distributors have been able to net a considerably higher average price for their total production of milk.

Second, although the producer-distributor used somewhat more labor per 100 quarts of milk, his wage rate for labor was only about one-half as much as for the larger distributors handling milk in the Portland market. The producer-distributors also had a

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[1] The results of the study have been submitted for publication as *Me. Agr. Exp. Sta. Bul. 395*, "An Economic Study of Milk Distribution in Maine Markets," but is not yet available for distribution.

[2] In the Boston milkshed, an average of about 40 per cent surplus has been carried over a period of years.

low total investment in land and buildings, tending to use remodeled farm buildings at a minimum cost without fancy fixtures and an ornate front. Their efficiency in the use of labor and motor trucks was not as low as might be expected from their small volume of milk sales, because they were able to supplement their work of milk distribution by work on their dairy farms.

In nearly all markets in Maine, the producer-distributors were permitted to sell their milk as raw milk and thus could avoid the additional expense of pasteurization. A final reason why producer-distributors have continued as an important factor in the distribution of milk is that they may net thereby a greater return from their production of milk than if they sold their milk wholesale in some other market outlet.

Milk Distribution Costs

Plant costs are 36 per cent; selling and delivery costs comprise 51 per cent, container costs are 5 per cent, and general office and administration costs are 8 per cent of all costs. The most important item of cost is for labor—with plant, route and office labor representing one-half of all costs. Motor truck costs are second in size comprising 14 per cent. All other costs are only 36 per cent, with no item over 5 per cent.

Sales per Distributor

The larger raw milk distributors had average distribution costs of only 28 cents per dollar of sales as compared with costs of 36 cents for the smaller milkmen. Because of lower costs, these larger raw milk distributors made an annual net profit of $1,667 per distributor as compared with only $183 for the group with smallest volume of sales. The medium-sized pasteurized milk distributors had slightly higher costs than those selling a comparable volume of raw milk, but made a reasonably high rate of profit. The four largest distributors, because of high wage rates, the granting of special services, and other factors, actually sustained a loss during the year of the study.

Sales Delivered per Mile

The concentration of sales on milk routes has an exceedingly important effect on delivery costs. The routes with the most intensive volume per mile had delivery costs for man and truck of $1.34 per 100 quarts, as compared with $2.05 on the least intensive routes. Thus the delivery cost for man and truck on relatively intensive routes was reduced one-third below the cost for routes with least concentration of sales.

The importance of greater volume of sales per mile warrants some discussion of how to obtain a more concentrated volume. The answer is simple—less duplication of routes, The solution is more difficult but real progress may be made by an exchange of scattered customers between distributors; and by a consolidation of routes, with one dealer buying out one or more competitors. By the latter procedure, economy results not only in delivery costs but also in plant operations. Board of Health regulations that require the use of additional equipment, as for pasteurizing milk, also indirectly may cause a reduction in the number of distributors, especially the small distributors. In a few markets of the world, duplication has largely been eliminated by municipal operation of milk distribution—but such procedure has not received much favorable backing in the United States.

Length of Delivery Route

An increase in the length of routes, when the volume delivered per mile remained constant, did not cause an especially marked reduction in delivery costs of producer-distributors. Producer-distributors utilized their extra labor and motor trucks in connection with their dairy farm operations and thus obtained relatively efficient use of such labor. For large dealer-distributors, however, where delivery men work entirely in selling and delivering milk, it is essential to have relatively large routes in order to get complete and efficient use of labor and motor trucks.

Credit Costs

Unpaid bills (accounts receivable) averaged 4.0 cents per dollar of sales. The bad debt loss on unpaid accounts was 20 cents per 100 quarts of milk sold, or an average loss of 1.7 cents for each dollar of sales. If we add to this the interest cost on money tied up in unpaid accounts, we have credit costs of 2.1 cents per dollar of sales and, in addition, there are bookkeeping and collection costs.

Container Costs

These costs average 5 per cent of all costs, or 15 cents per 100 quarts of milk sold. About one-half of these costs is for bottle caps and one-half for bottles lost and broken. The bottle loss in Maine markets is comparatively low, requiring only 1.4 bottles to be replaced per 100 bottles distributed. This loss is about one-half to one-third less than that reported for several larger markets.[3]

Important factors reducing bottle losses are:

[3] Clement, Clarence E., Milk Plant Operation. U. S. Dept. of Agr. Bul. 973, p. 31. 1923.

(1) Cash deposit of 5 cents per bottle sold wholesale (Maine Milk Control Board requirement).

(2) Use of a universal milk bottle in wholesale trade.

(3) Special effort by route men to obtain empty bottles. Larger dealers may pay route men a commission on returned bottles.

(4) Consumer education on extent of bottle losses and cost to industry—with request for cooperation.

(5) Milk bottle exchange has been useful in the larger markets. The dealer's name is placed on all retail bottles. Distributors return unowned bottles to the exchange and receive a moderate compensation. The distributors then obtain their own bottles from the exchange, paying a slightly higher fee to cover the cost of operating the exchange. There may also be rigid rules by exchange and local authorities to limit the use of containers to their owner. The cost per bottle for operating the exchange tends to be higher in the smaller markets.

Horse Versus Motor Truck

Horses were used by only a relatively few milk distributors, but were found to be as economical as motor trucks on the shorter routes of less than 15 miles. For producer-distributors the most economical means of delivery may depend upon the relative availability of horses or motor trucks used in connection with the farm business.

Use of a Route Helper

When a route helper assisted in delivering milk, labor was not used as efficiently as when there was only one man per route. The extra cost of an assistant, however, tended to be partially offset by a reduced cost for use of horse or motor truck.

Special Deliveries

In markets where the government establishes minimum producer and resale prices,[4] there may be a tendency for distributors to seek to increase their volume of sales by granting special services, without any increase in the resale price of milk. A special delivery trip to fill late orders received after the early morning delivery is one of these competitive devices. Distributors who made special deliveries sold less than one quart of milk per mile traveled in making special deliveries, as compared with an average of about ten quarts per mile on the regular routes. Obviously the practice of making a special delivery is uneconomical, and if adopted as a market wide practice, would increase the cost of milk distribution.

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[4] In most of the larger markets in Maine, prices have been established by the Maine Milk Control Board.

Butterfat Content of Milk Sold

Another device that is sometimes used for competitive reasons is to sell milk of a higher than average butterfat content. If such milk is purchased from producers at a butterfat premium, and then is sold to consumers at the regular market price, it is obvious that the distributor's spread is reduced. Or if a producer-distributor sells high test milk at the regular market price, his profits are reduced because of the higher cost of producing such milk. The extra cost of producing high test milk is about one-fourth cent a quart for each increase of .3 per cent in the test of the milk. Thus if the butterfat content is increased from 4.0 to 4.6 per cent, the cost of production is increased about one-half cent per quart.

This tendency to increase the test of milk has been evident in some markets, especially where Milk Control Boards have established minimum prices. In most cases, State Control Boards establish price premiums to be paid producers for higher test milk, but omit provisions requiring that a higher minimum price also be charged consumers for such milk. If, as a result, there is a general market-wide tendency for distributors to increase the test of milk for competitive reasons, it will be necessary ultimately to charge consumers a higher price.

It would be unfortunate indeed for the fluid milk industry and for consumers if milk prices had to be advanced because of a general increase in the butterfat content of milk. The economic status and health of many consumers would be better served if milk of a moderate butterfat test were available at a lower price. Perhaps a solution to this problem would be a graduated milk price adjusted in line with the butterfat content of the milk. Then, consumers who prefer to buy high test milk could purchase such milk at a price premium without raising the general price of milk to those consumers who can ill afford to pay for high test milk.

Summary

In considering ways of reducing milk distribution costs, the industry should give special thought to the following factors:

(1) Larger volume per distributor—resulting in increased efficiency in plant operations.

(2) Greater volume of sales per mile traveled on milk routes—resulting in increased efficiency in use of man, horse, and motor truck in delivering milk.

(3) Stricter credit policy—reducing bad debt losses and collection costs.

(4) Reduce bottle losses—require cash deposit on wholesale

bottles, have consumer education, and in the larger markets, employ a bottle exchange.

(5) Horses, in general, continue to be as efficient as motor trucks in the distribution of milk on routes up to 15 miles in length. For economical use of either horses or motor trucks, it is essential to get as complete utilization as possible.

(6) One man to a route tends to be most economical, but a route helper may be efficient on a concentrated route, if his services can be employed at a low cost.

(7) And lastly, too much emphasis cannot be placed on the need to curtail granting special services that result in increased costs of milk distribution—such as special deliveries. Any market-wide tendency to increase special deliveries or to increase the butterfat content of milk must result eventually in higher prices to the consumer. What the industry and consumers need these days is not increased services and extra costs, but decreased costs through more efficient operation of the milk distribution business. Increased efficiency is possible and the industry should continue to make progress in this direction.

"EDUCATION IN FARM FINANCE" IN FARM MANAGEMENT EXTENSION WORK

C. R. Arnold
Deputy Production Credit Commissioner

One major objective of farm management extension work is to help farmers make certain changes in their production practices which will improve their farm incomes. It must be recognized that farmers actually make only a relatively small percentage of the changes which they are convinced they should make in their farm business. Decisions on such changes are based very largely on the financial position, ready cash, or available credit at the season when the changes must be undertaken.

Until recently educational work in farm financing received very little attention either in the college classroom or by extension workers. Many farmers did not like to talk about their debts even with county agents or others from whom they desired business advice. In my opinion much of this attitude traced back to the previous major agricultural depression when debtors were at the mercy of creditors and in certain areas of the United States debts, especially chattel mortgage debts, were looked upon as a last resort.

On the other hand extension workers did not have much to talk about in regard to the advisability of using credit. They had no training along this line as very few colleges gave courses in agricultural credit. Also much of the agricultural credit was supplied by institutions designed for commercial credit, by dealers who used this as an aid to their business, or by individuals with surplus earnings. As a result agricultural credit varied greatly in regard to sources, terms, conditions, costs, and above all dependability. Most farmers desired to keep their credit situation a secret and generally received very little information concerning credit except from the individual to whom they were indebted. Creditors often dictated the terms and too often employed unethical methods when borrowers got into difficulty. Applications from undesirable individuals were often rejected on the excuse that they had no money available to lend rather than the true reason. Collections were forced on the ground that the money was needed for some other purpose. Because of these undesirable features, there was little opportunity to do educational work in farm finance and very little was done.

Most people are better producers than investors. This applies especially to farmers, but even some of the rest of us are more efficient at earning a salary than at investing our savings. Most

major investments by farmers at present are made with the use of borrowed funds. In my experience in farm management work I recall cases where a farm business record had been analyzed year after year with a farmer and I was surprised to learn at the end of the next year that he had bought a farm, a large item of equipment, or had made some large investment. Too often a major factor in his decision was the offer of a loan to be paid back on a so-called easy-payment program. Much credit advice for farmers has come from commercial lenders or salesmen using credit as a bait. Often this advice is not based on the benefit to the farmer, largely because few of these individuals are sufficiently acquainted with the farming business to give such advice. One of the greatest advantages of a cooperative credit system is the interest in the members who are the only customers.

Probably the most important decision and one which largely affects the financial position and progress of a farmer during his future lifetime is his decision regarding the purchase of a farm. This has been true in the past and is just as true today. Yet with all of our educational work among farmers, relatively little assistance has been given in helping men to make a proper financial analysis as a basis for this decision. They have been told how to select a farm but little help has been given in specific cases, Too many times farmers have thought of using credit in terms of how much they can borrow rather than how much they should borrow. A farmer may improve his crop yields and livestock production, organize his business into a proper balance, and then make an investment which may place the entire farm business in jeopardy.

Borrowing on credit is using future income. If this income is not forthcoming, there is trouble ahead. A bad loan hurts the lender, but usually hurts the borrower more as he is often put out of business. Lending more than can possibly be repaid reduces the respect of the individual for his obligations and promises. If farmers are going to use more credit than in the past as now seems evident, it is the definite responsibility of some agency to assist them through educational work regarding the advantages, dangers, and proper use of credit.

The use of credit must be analyzed from the standpoint of the service to the borrower and not the lender alone. Credit should be used when it will improve the income through a saving of expenses or a better balance of the farm business which will add to the net farm income.

Credit must be used as a simple farm tool. Some people need it and others do not. Some know how to use it and others do not. It is flexible inasmuch as it can be reduced or expanded according

to needs. Some people borrow money when they should not; others could add to their farm incomes by using it. The use of short term credit in order to pay cash for supplies rather than paying the time price often saves several times the cost of the loan.

In farm management work we often talk about a poorly organized or poorly balanced farm business. It is not uncommon to find a poor balance of farm debts. By this I mean that all crops and chattels may be mortgaged to the danger point so that satisfactory operating funds cannot be secured; but at the same time there may be little if any debt on the land. Also the reverse may be true where the land debt is so heavy that installments are a severe burden because of objection to a short term chattel mortgage.

Consideration of the problem of farm finance must be considered as a part of the whole farm business. It is not a separate enterprise but should have a definite place in farm organization, outlook, or farm planning programs. It is purely a farm management factor and in my opinion just as important as size of business, crop yields, labor efficiency, or productivity of the livestock. Only through analysis of all phases of the farm business and of the way they fit together as regards seasonal income and expense, can a farm finance program be arranged. The income from the farm business which will repay the loan should be set forth in the plan before an application is made for any loan. Farm finance is a definite part of the farm management program and the educational work falls definitely in that field.

Too many farmers are seriously in debt at the present time. It is easy to say this is the result of high prices of farm products at one time or low prices at another. A statement not at all uncommon places the responsibility on the creditor for loaning too much money. This statement cannot be questioned. Regardless of the reason, it must be recognized that usually the borrower made an application and put forth effort to obtain the loan. It might also be said that oil companies sell people too much gasoline. The decision rests with the purchaser whether he is buying credit, fertilizer, or gasoline. However, with credit, the creditor as well as the debtor usually loses by over-lending.

The extreme variations in incomes between farmers even on similar farms in the same area due to differences in management are well known. Many of the factors causing this variation are not known to the lender and over-lending in certain cases will never cease until the borrowing farmers themselves control it. It is necessary that they have a better understanding of the dangers as well as the advantages of using credit and analyze their own business in terms of credit needs and ability to repay a debt. A

proper analysis would indicate that some farmers should avoid indebtedness. Some will make more financial progress and live better on rented farms than if they attempted to purchase one.

There is a distinct difference between a safe loan, from a creditor's standpoint, and a sound loan. A short term loan which is secured by a mortgage on plenty of collateral in the form of work stock and equipment may be entirely safe. By this I mean that it may be collected at maturity through a forced sale of operating equipment. However, if the farm business does not return sufficient income above expenses to repay this loan, it was not a sound loan. Selling the operating equipment puts the farmer out of business and a serious mistake was made by both the borrower and the lender when the original loan was made. A rejected application for a loan, if proper analysis were made, is beneficial usually to the applicant as well as to the lender.

Making sound short term loans to farmers is largely a farm management problem. In order to list some of the specific ways in which educational work in farm finance may fit into the farm management extension program, I will indicate some parts of the present program of the production credit system.

During the past year more than 240,000 short term loans have been made by production credit associations to farmers for agricultural purposes. Before these loans are approved, an applicant must prepare, with the assistance of the association personnel, a budget of expenses and income for the year. This does not mean simply the expenses which are to be paid from borrowed money but the total budget for his farm business. The loan budget must be organized so that funds will be available as needed and repaid as products are sold. Thus it becomes a part of the operating equipment for his farm business. Loans are based on the ability to repay from farm proceeds with a backlog of collateral as a safety factor rather than just being safe from the standpoint of sufficient collateral. Repayments are due when mortgaged property is sold rather than simply the date on the note. The number of borrowers who had never before projected their business ahead and considered their financing on a planned basis is interesting and surprising. It is just as essential that they consider the income from sources not pledged to the creditor as that to be received from the mortgaged property since this must fit together with return of the borrowed funds and supply the necessary operating and living expenses throughout the year.

Teaching farm management is not the function of a credit agency. It is even dangerous for a creditor to make too many suggestions regarding how the borrower should operate his business.

However, it is the concern of the creditor to see that the money is used for a constructive purpose which assists in the proper organization of his farm business. It is equally important that the borrower know something about the soundness and permanency of the creditor. Many farmers have suffered because of the failure or changed policy of the source of their loan funds. Building up a business on the use of credit is dangerous unless there is some assurance that credit will continue to be available as long as the debtor makes proper use of it.

A considerable percentage of the production credit association members are repeat borrowers, many of them having obtained loans during each of the last five years since the associations were organized. At the present time every association in the United States either has prepared or is in the process of preparing a loan history record for each member. This record will show by years the amount of money borrowed, the purposes for which the money was used, the borrower's financial position each year, the progress being made on real estate or other indebtedness, a complete inventory of farm property, the acreage and yield of crops grown, and all income and expenses as well as the repayment record and difficulties, if any, encountered in collecting the loan. This record will show in brief summary form not only the loan experience of the association with this borrower, but also the progress or lack of progress being made with his farm business. Again it is both interesting and surprising to find the interest which members themselves show in this record at the time they apply for another loan. In one instance a farmer drove a total distance of 120 miles the following day after the association secretary had explained his loan history record in connection with his new application and asked if he could secure a copy of this analysis. He stated that he had been farming many years, but had never before had an analysis which showed where his farm business was going.

Most troublesome loans in the production credit associations result from insufficient knowledge of the ability of the individual at the time the original loan was made. This loan history record gives the association a better knowledge of their borrowers, assists the association in setting up new loans on a sounder and more useful basis, assists the borrower in determining his credit needs and planning production and marketing of his products to greater advantage, and is very helpful in showing a repeat applicant why certain requests on his part cannot and should not be granted. Farmers generally like to be told the truth about the credit they buy rather than have a rejection covered up by some flimsy excuse.

Selling farm products at a specific time in order to meet certain

expenses is a common practice. A good credit rating with a dependable credit agency is a valuable asset and properly used should increase the farm income through a better organization of the farm production and marketing program.

Many commercial lending agencies have adopted the budget plan of making short term farm loans during the last three or four years. Also, farm management extension workers and other educational agencies in some states have recently done excellent work in acquainting farmers with sources and proper use of credit. Farm inventory work was a definite step in education in farm finance.

In my opinion educational work in farm finance has not kept pace with the increased use of farm credit during the last decade. Best estimates indicate that more than three-fourths of the farmers of the United States use credit. Included are farmers in every part of the country and in every type of agricultural enterprise. Almost without exception, these people have problems in farm finance which must be answered each year. When it is understood to be a part of their business, farmers generally do not hesitate to discuss their credit needs and problems in farm finance. During the last 12 months 310,000 people attended the annual meetings of production credit and national farm loan associations in the United States.

It is natural for all of us to desire to make our own decisions. Farmers are no exception to this rule. In order to make these decisions wisely, they must have more information regarding the benefits and dangers in the use of credit; an understanding that credit is a piece of equipment which may assist in organizing their farm business; a better knowledge of how to analyze their own business; the sources of credit available which will fit their needs; the reasons for certain requirements imposed by sound lending agencies; and the value of a good credit rating. It must also be recognized that farmers cannot and should not depend upon the credit agencies to make an analysis of their business for them; simply because they can borrow is no indication that it should be done.

ECONOMIC INFORMATION IN FARM MANAGEMENT EXTENSION

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Economic information in farm management extension needs to be expanded rapidly to include more of the public or planning point of view. Its chief purpose following the World War and even up until 1929 was to point out to the individual producer what economic forces were likely to affect the prices of the various farm products for the next few months or years, hoping thereby to guide the farmer toward more profitable production and marketing plans. Economic information for farmers has had in it since its beginning both a private and a public purpose. By showing the individual producer his price opportunities it tended to increase his income and at the same time to provide consumers with food and fabric at more stable prices. The recent emphasis on agricultural planning has added a new public purpose in economic information, that of guiding the planners in the best interests of the public.

After the War it was evident that the American Farmer would have to confine his efforts more nearly to the production of goods for the home market, and one of the principal reasons for establishing Agricultural Outlook work in 1923 was to help the farmer to see the need for adjustments in production. It was believed that, seeing this need, individual farmers would bring about the needed adjustments voluntarily. Needless to say, this did not prove to be the case. The farmer can make use of economic information to make needed adjustments in his production program much better in a period of expanding economy than in a period like that of the last few years when our entire national economy is out of balance and emphasis is placed on contraction rather than expansion.

In normal times the farmer who comes to an outlook meeting comes with the idea of finding out where he can increase his income by letting up a little here and expanding a little there; but certainly at the close of outlook meetings with farmers during the last few years those conducting the meetings could not avoid feeling that they had about told the farmer that there was little or no place to expand production, and that incomes of all producers could be increased by producing less.

There are, a number of peculiarities about the farming business which make a voluntary reduction program based on Economic Information along unworkable even though such information points to increasing profits (to the industry) through curtailed production. One reason is that each farmer cannot be sure that

every other farmer will cut his production, and if a substantial number of other farmers do not curtail output, then the farmer who does cut his production also reduces his income. Another reason why it is difficult for increased income to be secured through reduced output resulting from economic information is because costs in farming, unlike those in industrial production, are largely fixed. Such costs as interest on investment, and insurance taxes, change but little with variation in production. The industrialist can cut his costs materially be discharging labor, but the farmer's labor is for the most part that of his own family, which is often the cheapest of his production factors.

The established farm management plan may itself prevent the farmer from reducing his output. The dairy farmer, for example, may see clearly from the present outlook that the income from this enterprise would be higher if fewer dairy cows were kept, but still he may not deem it advisable to reduce the size of his dairy herd when he has about the right number of cows to make the most economical use of his feed, equipment and labor. Then, of course, there are a great number of farmers who fail to make adjustments because they are the victims of inertia or habit. They have followed the present production plan all their lives and will continue to do so for the same reason that they are Democrats or Republicans.

Public planning and guidance is making the old type of economic information for individual producers less effective. As we move in the direction of public planning for agriculture, production control, marketing agreements, the purchase of surplus commodities, and commodity loans, the old type of economic information intended to guide individual farmers becomes less reliable because additional unknown factors have been introduced such as, how many farmers will go along with the control program? How many will apply for loans on corn, wheat or cotton? What quantity of butter will be bought by the Dairy Marketing Association? How long will this corn, wheat, cotton, and butter, be held off the market and at what price will it be sold?

While such public action as this is in the direction of stabilization it nevertheless makes it more difficult to guide the individual farmer by means of economic information, and until public policy has become more permanent and predictable, economic information of the old type as a guide for the action of individual farmers is bound to remain less effective.

As we move toward public planning and public direction for agriculture we need, in addition to the present type of information, which is designed to aid the farmer in anticipating price changes, more of the type that will assist the planners. They need to know

more about long-time trends in the production and consumption of farm products both at home and abroad. Instead of information which merely points out, that hog numbers are low and due to increase, the planners should know about how many hogs should be produced to provide the domestic and foreign market with a supply of pork and lard at prices sufficiently high to support this enterprise. This means that the planners should have the information comparing present production, exports, population, etc., with normal or average. The planners will also want to be familiar with the trend in production of lard substitutes. They will want information which will help them to answer the question, will we have too much lard when and if we get back to our normal production of hogs? The planners are in immediate need of such information for all of the principal agricultural products.

Besides the need for such information concerning the trends of total production and consumption, the planners also need to know more about the natural advantages and disadvantages of producing farm products in different regions of the United States. Sound national economy requires that our planners take account of the law of comparative costs in their plans, but so far very little scientific information has been made available which will enable the extension service or the planners to guide agricultural production along most economical lines in the various agricultural regions of the United States. Specifically I have in mind such questions as, should Ohio farmers be encouraged to go into commercial potato production or are the advantages of producing potatoes in other areas so great that the Ohio farmer should be discouraged from expanding this enterprise and encouraged to confine his efforts to commercial truck crops or dairying. Much research is needed in this field to give intelligent direction to farm management extension and public planning for agriculture.

In addition to the preparation and dissemination of this broader type of economic information for those who are directly active in the formulation and execution of plans for agriculture, the extension service is obligated to provide much the same type of information for the public generally. Not only farmers, but, in fact, all citizens of the nation should have this information for, in a democracy, the formulation and successful execution of plans depends upon a more or less intelligent understanding of the reasons for the plans, by at least a majority of our citizens.

In Ohio an expanding demand for such information is evident in the shift from specific commodity outlook meetings to more general economic meetings in which such topics as the following are discussed: imports and exports, industrial and agricultural

production and prices, price-control, the two-price system, the general price level, cooperation as a solution of the farm problem, etc. This same tendency is evident in the demand for economic leaflets and radio and news releases.

Business men's groups are also requesting more reliable information concerning the economic status of agriculture. This is evident from the increasing number of requests for various economic leaflets and farm economic talks before Rotary and Kiwanis clubs and the like. The problem of informing urban people of the economic status of agriculture and the need for certain adjustments has been made vastly more difficult because of the general anti-attitude taken by the press toward most anything attempted in behalf of the farmer. Vast numbers of industrialists, laborers, and even farmers have gained erroneous ideas concerning the agricultural problem and its solution by continually reading news items and editorials written by those who either misunderstand the problem or will fully choose to misrepresent the facts. The task of getting accurate information across to those who are not engaged in agriculture is very difficult because of the limited number of avenues and personnel, but it occurs to the writer that this is an essential requirement in our economic information work which must be met if agriculture is to find its proper place in our national economy.

The type of information to which I refer is not that which merely decries the economic position of the farmer and widens the gap between the farmer, the industrialist and the laborer, but rather the constructive type of information which shows the inter-relationships between the various productive groups in our economic system. For example, information which merely shows the margin between prices received and paid by farmers, or the difference in the trends of farm product prices and industrial wage rates, tends to sharpen the antagonism between farmers, laborers and industrialists. What is needed is more emphasis on real incomes and less emphasis on money incomes. Many farmers and industrialists are wondering today if lower wage rates or a fixed monthly or yearly income for labor would not solve many farm and industrial problems and at the same time increase the real income to labor. This may or may not be the solution, but before such a step could be taken in a democracy a vast amount of information would have to be made available to the public and a part of this responsibility would logically be borne by the extension service.

The extension service will continue to demand more and better information upon which to predict the prices of various farm products, but there will be an increasing demand for information that

will help guide and balance the economic machine as a whole.

To conclude then, the principal thesis maintained here is that increased emphasis on planning for agriculture has given rise to an urgent need for more economic information to guide not only those who draw up the plans and execute them, but those who must support the plans and in a democracy this means a majority of our citizens. This implies a sufficient redirection and expansion of research, administration, and assembling of basic data to throw the needed light on our planning problems as well as adequate means and personnel for disseminating this information to farm people and to the general public.

FARM RECORDS AND ACCOUNTS IN FARM MANAGEMENT EXTENSION WORK

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It is generally agreed that farm accounting should be the basic project in any Farm Management extension program, state or county. Facts are the very foundation of extension work that actually gets somewhere. If records and accounts are not kept by farmers, a survey study should be made when considering farm management problems.

Dr. C. B. Smith, former assistant director of the Federal Extension Service, was always a staunch advocate of account work with farmers. He reports that the survey method of studying the farm business was the earliest method used in this country. It was introduced about 1910. The earliest attempts at a study of successful farms by this method were made by the Federal Office of Farm Management under the supervision of Dr. W. J. Spillman who headed the Section of Field Studies and Demonstrations.

A few years later Farm Account Books were made available. Books were developed for a financial record of the entire farm business, and for the detailed study of an enterprise. Among the states that made early outstanding success of their farm record work were New York, Ohio, Indiana, Illinois, Iowa, Massachusetts, Minnesota, Maine, Montana, North Dakota, and California.

Now, after the lapse of many years, we still find farm record projects a major activity in the Farm Management extension program of most states. The states that do not sponsor such a project wish they had the information it would obtain.

In fact, it may be said that during the past five years more interest has been manifested in farm records than ever before. Much of this interest has been stimulated by the various governmental programs. The Farm Credit Administration has vigorously encouraged farmers at least to take an annual inventory and file a financial credit statement. The Agricultural Adjustment Administration has advocated the use of farm records to enable a farmer to determine his base and to show proof of compliance with the various adjustment programs. The Farm Security Administration has insisted that their farm borrowers develop a farm and home plan and keep records to indicate their adherence to the plan and the results obtained.

The state colleges list as supporting reasons for an extension project in Farm Records and Accounts:

1. The demand from many of the younger, more aggressive farmers for a system of accounting that will enable them to know the results of each year's business and the relative efficiency of the different parts of that business so they can raise the level of efficiency and increase the profits of the entire farm unit.

2. The county agricultural agent's need for a representative picture of the organization of and returns from farms in his county, and his desire to discover profitable farms which can be used to demonstrate good farm organization and good farm operating practices to others through the medium of farm tours.

3. The general demand for information on the types-of-farming in the various parts of the state, and on the profitableness of the different types of organization found within each area.

4. The need for information which will assist in drawing leasing contracts which will be satisfactory to both landlord and tenant. Both parties are interested in determining whether their lease provides for a profitable system of farming and an equitable division of income and expense. Also, there are many farming enterprises in each state operated by fathers and sons who desire assistance in drawing up a leasing contract that will give as much encouragement as possible to the son.

5. Many schools desire to offer Farm Accounting as part of the agricultural teaching. They are in need of assistance in properly presenting and handling the subject.

6. Many persons who desire to keep accounts are unable to do so unassisted. Many who start keeping accounts fail to complete a full year's record if not urged or encouraged.

7. Supervision of accounts is necessary if the individual farm records are to be made comparable. Differences in recorded inventory values must reflect differences in worth. Uniformity in recording current receipts and expenses is essential for comparability. Farm accounts kept under supervision provide a basis for comparison and interpreting individual records, greatly enhancing the value of the record to the farm operator.

8. The organization of the farm unit is as fundamental to financial success as are the management or practice phases of the various individual enterprises. The correlation of the two, and the study of the relation of one enterprise to another and to the farm as a whole are of major importance.

9. Because of changing economic conditions and resulting changes in values, and because of developments of science and improvements in farm machinery, the farm operator must adjust his business from time to time in order to obtain the most satisfactory financial returns.

10. Every farmer has the problem of adjusting his farm organization to take advantage of the outlook for prices of his products. The basic information provided by a farm accounting project is necessary for the local adaptation of outlook information.

Extension specialists in Farm Management are able to list these many reasons for desiring a farm accounting project. The individ-

ual farmer does not realize the several benefits to be derived from adequate records until they are called to his attention.

The kind of record a farmer should keep depends upon what he wishes to know. It is the responsibility of the extension service to help him obtain this information by having available the record forms which, if properly filled out, will give him the desired facts. Some farmers just want a form for making an annual inventory. Some want provision for keeping a cash record. Some are interested in a farm map and crop production records for historical purposes. Some want livestock production records. Some want a complete record of an individual enterprise, while some are of the opinion that they want complete cost accounts of the entire farm business.

I repeat that the farmer should be assisted in keeping the type of record that will give him the answers to the questions he has in mind.

However, I believe that after an explanation the farmer will agree that the most appropriate record for him to keep is a financial record of his entire business, supplemented by a detailed cost study of his most important enterprises. For the occasional farmer who is specializing in a single enterprise, an enterprise analysis may provide complete information, but for the majority of farmers a financial record of the entire business should be the basic record.

The financial record should provide an inventory at the beginning and at the end of the accounting year, a complete record of receipts and expenditures of the business, production records, and such supplementary information as is essential for an analysis of the business. Such a record, together with enterprise cost records are adapted to an extension project.

Every farmer is a potential cooperator in a project which encourages and aids him to keep such a record. However, one need not fear that all farmers will enroll for such a project the first year nor during the first several years of aggressive promotion. All farmers have the ability to keep a record, but not all farmers have been educated to such an extent that they desire the information. Many of those who do desire such information do not have the ambition or "stick-to-it-tiveness" to keep a record. Many who have the desire and ambition are reluctant to have any one but themselves know anything about their business. Some farmers are just not friendly to the extension service.

After ten years of reasonably aggressive promotion of an extension project in farm accounting in the State of Michigan, we had, at the beginning of 1938, approximately one per cent of the State's farmers (or 1,879) enrolled. In addition many thousands of other farmers provide themselves with books annually, and it is known

that many of these keep their books, especially those assisted by the personnel of the Farm Security Administration.

Speaking from experience, I would say that the first educational work in promoting a Farm Accounting Project should be with the county agricultural agent. It should not be assumed that he knows all about it, or that he will be enthusiastic for it without sufficient training to enable him to answer questions relative to the proper technique of record-keeping with confidence. The project should not be sponsored in a county until the county extension agent wants it and is able and willing to assume his share of the necessary work.

The farm management specialist must realize that a farm accounting project demands time, energy, and patience on his own part. Again, speaking from experience, the specialist should be a relatively young person. It is definitely not a job for the "old-timer" to start.

A farm accounting project conducted as part of an extension program must be without charge to the cooperator other than perhaps for the materials, such as the farm account book, used.

It is true that an extension project in farm records and accounts is of most value to the individual cooperator. As mentioned previously, the motive for keeping a record varies from one cooperator to another at the start. However, in a properly conducted project the farm account book will not be regarded as the end in itself. Rather, the record will be regarded merely as a tool. The farm management specialist will not be satisfied that his job has been done well unless the farmer is influenced to make desirable adjustments that are reflected in higher earnings.

The farm management specialist must not become discouraged if these adjustments do not come rapidly on some farms. Some of the desirable adjustments cannot be made in a hurry for various reasons, frequently because of the lack of capital. The real task for the specialist is to take the man and farm as they are, and to recommend the changes that he is able to make with the resources available.

The most serious and most frequently heard objection to a farm record project is that too few individuals are reached for the time devoted to it. It is true that in 10 years time, only 4,889 different farms have been enrolled in the regular established project sponsored in Michigan. But it should not be thought that only this number has been benefited by the project.

The project permits of preparing an annual comparative Farm Business Report for each of the various recognized type-of-farming areas. These reports are made available in large quantities and are

distributed by the county agricultural agents to all interested persons. These reports are based upon carefully kept records, so they show the facts relative to the factors that make for financial success in farming. These facts are brought to farmers through the medium of general meetings conducted by the extension specialists and by the county agricultural agents.

The project reveals successful farms which are visited by farm management tours conducted for the cooperators, county agents, students and the general public.

The farm record project provides a factual basis for recommendations to other farmers which are generally more reliable than recommendations based on the opinion of the farm management specialist. Further, the combination of financial records for the entire farm unit plus detailed cost studies for individual enterprises provide the largest number of usable facts.

When such a project is introduced in a county every method known to extension should be used to get as many persons as possible to attend, voluntarily, a farm account school. At this time instruction in the proper technique of keeping adequate records is given and a beginning inventory is recorded. The persons most interested, the number not to exceed an established quota, should be enrolled for follow-up service. These individuals should be visited during the year to see that their inventories are complete and comparable and that their current records are properly posted. These same individuals should be met by individual appointment at the end of the year so that their accounts may be audited in their presence before the records are summarized in the state office. The audit is essential to accuracy of the records. It is these summarized records that should be used as a basis for the annual comparative reports for the various type-of-farming areas. The county agricultural agent and farm management specialist should return a copy of the summary to each person for whom a record was closed. The report should be properly interpreted and every effort should be made to recommend any practicable, proper adjustments. A definite attempt should be made to improve the financial returns from these farms. They should be considered as demonstration farms to be visited by farm management tours after a sufficient number of years have elapsed to prove by successive years' records that they are really successful. It is my opinion that these farms should be continued in the project an unlimited number of years. Annually additional cooperators should be enrolled for the follow-up service only in sufficient numbers to maintain the quota.

Those individuals who started records, but were not enrolled

for the follow-up should be called together at the end of the accounting year for a summary school. They should receive guidance in checking their own books for completeness and accuracy, in summarizing their books, and in calculating as many efficiency factors as possible. Annually, an effort should be made to influence as many persons as possible to keep a record. This would mean an annual beginners' school and an annual summary school in each county to take care of all interested persons not enrolled for the complete service. A half day devoted to each type of school is the least time that should be allowed. It should be expected that the appreciation for this project will increase annually and that the number of persons keeping records will constantly grow. It is probably true that, regardless of the effort put forth, many years will pass before any high percentage of the farmers will respond.

This procedure will permit limiting the amount of time devoted to this type of project to the personnel and budget available. It will permit offering at least some assistance to a large number of individuals. The annual comparative reports based upon the records summarized in the state office will provide a basis of comparison for all of the record-keepers.

I believe farm records and accounts are basic to any extension program in farm management. Intelligent extension work must be based on the facts and local facts are to be desired. It would be well for every county agricultural agent to have from 25 to 50 farm records analyzed each year.

Let us hope that it will not be long until adequate personnel and finances are available to make this possible.

FARM MANAGEMENT FACTS IN BUILDING AREA AND STATE PROGRAMS

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The need for farm management facts has become of increasing importance during the last few years, especially since the emergency period began. A large number of the agricultural institutions had been collecting and analyzing some farm data for a number of years, but it took the depression years to arouse interest in the value and importance of the greatest possible use of such data in an effort to meet the situation.

The subject of farm management touches all rural life, as well as the activities of all extension specialists and agents. It takes a number of years of work to secure sufficient economic data from farm records to build the background for a state extension program. Our first records were secured in 1927. That year there were only 27 records obtained, and by 1934 the number had increased to 1,400. Since that time, the number has run from 2,400 to 3,600 per year. With the exception of two areas, our records are reasonably well distributed throughout the state. This has given our farm management department the opportunity to furnish considerable basic data to practically all county agents in the state, and at least a limited amount to all.

It is to be recognized that no extension plan is of any real value until it is put into operation upon the farm or in the home, or both. Too many plans made at headquarters give the appearance of having been drawn too far from the farm to be usable to those for whom they are intended. Therefore, data coming from records kept by men who have both feet in the furrow should serve as a balance wheel to our thinking when plans are being made.

For some years there has been a growing need for a closer coordination of the work of the various extension subject matter specialists and county extension workers. Developing along with the above need, has been the growing demand for comprehensive state rural programs with long-time objectives that would more adequately serve the farm people in the different agricultural areas of the state, the counties and the communities. All data furnished to the county agents should be made available to, and used by, the district agent, specialist, and administrative force. This is necessary if work of all personnel is to be coordinated into an effective, workable program.

The specialist, for example, needs to know how well the particular enterprise with which he is working fits into the agriculture

of a given area, whether this enterprise is adapted to large farms, small farms, or both, and the relationship this particular enterprise bears to other enterprises engaged in on the farms of the area.

In all areas, the most successful farmers are those who select the enterprises best adapted to their area and their particular farms, and combine them in a way that will give the best balance to their farming operations. All production specialists should know these facts, and not push their particular specialty to the point where they will have thrown out of adjustment the farming operations of their particular demonstrators, thereby doing more harm—in their eagerness for the expansion of their particular enterprise—than they have done good by teaching better enterprise practices.

Therefore, coordination of all extension activities is necessary, if an effective program is set up in each of the agricultural areas of a state. We employ five steps in this procedure:

1. The farm management department is made responsible for making up the skeleton program for each of the agricultural areas of the state. These programs are based primarily upon data obtained from farm records.
2. After the programs are mimeographed, each specialist and district agent receive a copy. These people are asked to submit any recommended changes or additions they would like to have made in any of the areas. Economic specialists, production specialists and district agents must agree before the third step in the procedure is taken.
3. One-day group meetings of county agents and home demonstration agents are held at central points in the different agricultural areas to further consider these recommended area programs. Much interest is shown by the agents in this type of approach, and usually the plans are modified or enlarged upon, but so far as the basic principles are concerned, I do not know of a single occasion where a group of agents have asked that the fundamental elements of the original program be changed.
4. In each county there is a county program planning committee composed of farm men and farm women. It is the responsibility of the county and home agent to present the *area* program to their committee for consideration and incorporation in the *county* program.
5. The county extension workers, in cooperation with county Program Planning Committees, call together the leaders from the different communities at some central point, usually the county-seat for a discussion of the county program, or plan of work. These meetings are termed "County Leaders' Meetings." The community leaders are responsible for assisting in the development of the program in the different communities of the county.

This may seem to be planning from the top down, but in reality the basis of the planning as I have given it comes from the farms—that is, the farm records. Then each group, including the specialists, the district agents, the county and home agents, and county

and community program planning committees, are given the opportunity for suggested changes and expansion. However, if there were community organizations in each community of the state, we might want to make a somewhat different approach than the one now used.

Programs built for the different areas, counties and communities serve as guides to the best agricultural practices for a particular region, but due to the fact that these programs are drawn on such a general base, they are not expected to apply to a specific farm.

For farm management extension work to be fully effective, though, it is necessary to get as close to the farmer and his problems as possible, and in our endeavor to do this, many of the farm record keepers of Tennessee have also been made unit demonstration farmers. In this capacity, they serve as demonstrators in enterprise practices and in farm organization and management, including soil conservation and water control.

In most of our communities there are from three to five of these demonstrators, representing the large, the medium and the small sized farms. These men are nominated by fellow farmers. By this procedure, the demonstrators have a feeling of responsibility to their community, and the community in turn has a feeling of pride in their demonstrators.

One of the gravest charges that can be placed against extension during the 25 years of its existence is the relatively few records in county and head-quarters offices showing definite measurements of accomplishment and growth.

Farm records, home records, enterprise records, and surveys can and should be used as yardsticks for measuring progress on the individual farms, in the homes and in communities. According to the results secured on unit demonstration farms, interesting comparisons can be made not only of changes brought about in the area as a whole, but also the changes made from year to year on the individual farms within a given area.

Now, let us talk about the possibilities of intensive work in a community and the measurement of results. In 1937, the farmers in one Tennessee community, working in cooperation with county and home agents, made a survey of their community giving an inventory of conditions existing at that time. Only three farmers in the community had ever used lime, and none of them phosphate; very few acres of cover crops were noted, and there had been a considerable lack of pride in the appearance of homes and surroundings. After establishing a community organization with a definite program, these same farmers in the fall of 1938 made another survey, and here are some of the changes which

had been made: There had been 20 acres of land terraced; 1,275 acres limed; 1,125 acres phosphated; an increase of 1,300 acres of cover-crops; 17 farmers had sown red clover who had never grown it before; 24,750 yards of fence had been constructed; 14 homes either built or repaired; 31 homes screened; 12 homes painted; 10 homes have installed electricity; 2, electric stoves; 5, electric refrigerators; 7, electric washing machines; 7, electric irons; 9, electric radios; 2, running water; 5, telephones; 48, new mail boxes; and 14 new barns had been built; 20 farmers had done some landscaping of their home grounds, and 80 of the 132 farm families are keeping farm and home records.

Photographs have been taken of 25 per cent of the farmsteads in the area. We feel that if progress is made on the farm, it will be reflected in the home. Three years from this time, we will take photographs of these same farmsteads again to show any changes made in the appearance of these homes. Such data, when kept over a period of years, should indicate whether we are making progress in our extension activities.

It is no easy task to get an extension personnel to base their programs upon an economic basis such as I have described. Our organization has made no 100% changes. Old methods of program planning are long-established customs, and habits of years are not easily broken; however, agents and specialists should not be too severely criticized because they tend to base their programs upon an enterprise approach which takes only a limited number of conditions into consideration. In most cases their college training led them into such a procedure, and unfortunately it has been continued in extension work.

Changes in educational methods, however, are essential in order that extension education may keep abreast of rapidly changing agricultural conditions. The training of an organization should never cease, and we have made some effort in this direction. We have held a three-weeks short course each of the past two summers, in which farm management—among other courses—was offered to our agents, and 120 of our 171 County agents and assistant agents have already taken this course.

As a supplement to our short course, in 1937 we held 20 two-days farm planning schools for the agents in different areas of the state. In 1938 we repeated the same procedure, but enlarged the two-days schools to include both farm and home planning, and invited the home agents to participate as well as the county agents. Actual farms and homes were used in these planning schools. All our county agents in the state have attended one or both of these series of two-day schools.

You may well ask if such economic training given to our extension personnel has been of material value in planning their work. It has not brought perfection, nor has it yet brought many of the results we would like to secure; but, like the man who had drunk 12 cups of coffee for supper, when asked if it did not keep him awake, replied—in his droll Southern accent—that it *helped*. We can make this same reply in regard to economic educational work with our extension force.

At least the analyses and study of farm records modified the thinking of our specialists, agents, district agents, and administrative force, and we feel that a clearer conception of the problems that now exist in the different agricultural areas, and the methods of solving same, have developed. It is true that the economic approach, even though basic is not the only phase we need to consider when making out area programs of work. Such a single approach would not give a full picture of the situation, or solve all the problems existing; but, in line with the thinking of the man who drank the coffee, it can be said with *emphasis* that farm management facts *do help*.

GRAPHIC METHOD IN PRICE ANALYSIS

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University of Illinois

Any complete discussion of the use of graphic methods in price analysis must cover their use throughout the entire field of price analysis. Not only may graphic methods be used somewhere in every branch of the field; but every step in every type of price analysis can be carried through by graphic methods, because graphic methods may be used not only as a means of presenting data but also as a means of computation.

Numbers are things we use to express magnitudes, and they can be expressed graphically (as distances) so that we can even dispense with numbers to represent our original data and our final results. We can add and subtract graphically as can readily be demonstrated with ordinary graph paper or a pair of ordinary rulers. The slide rule provides us with a method of multiplying and dividing, and of obtaining powers and roots graphically. (The same operations can of course be done with logarithmically ruled graph paper.) With the number system itself being capable of graphic representation and all the fundamental processes of calculation being subject to graphic treatment, it is possible to do all sorts of statistical calculations graphically.

Ordinarily, however, there is little point to using a procedure of graphic calculation which parallels the usual numerical methods step by step. In these days, by the use of the ordinary calculating machines, numerical addition and subtraction can often be accomplished more rapidly than graphic, and multiplication and division nearly as rapidly.[1] Graphic methods of calculation are especially advantageous only when they reduce the number of operations to be performed. These "short cut" methods include the use of nomograms, graphic interpolation, the determination of the equation of a straight line through two points and many other graphic solutions of problems of algebra and calculus. Of especial significance in price analysis are the graphic methods which perform some sort of averaging.

There are, however, two fundamentally different purposes for which graphic methods may be used in connection with statistical data. They may be used as a means of calculation. They may be used to display data.

In characterizing the second purpose I have used the term "display" rather than "present" because the former implies presenting in full—spreading out to view. The term "graphic presentation"

[1] I am not including here calculation by punched card methods.

is often used to include the "picturing" of data in highly summarized form, whereas we are here concerned with a different use—with research rather than extension. Examples of graphic display include the charting of data in time series, dot maps, scatter diagrams, and similar graphic presentations where a large number of data are shown individually.

Computations may be performed either graphically or by the use of numbers. Whether the method used is graphic or numerical, it is intended to arrive at a quantitative result and the method is significant only as it affects the accuracy of the result or the ease of arriving at it. Generally speaking, however, the objectives of graphic display cannot be accomplished adequately by numerical

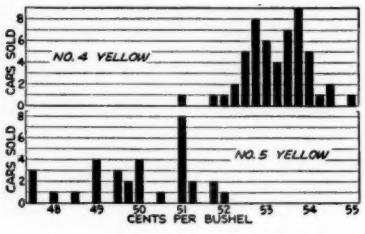

FIG. 1. FREQUENCY DISTRIBUTION OF PRICES OF CARLOT SALES OF CORN, CHICAGO—NOV. 4, 1937

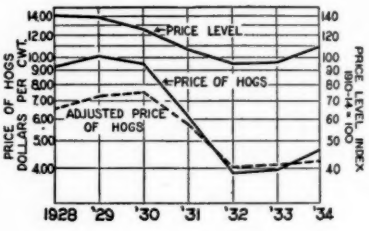

FIG. 2. HOG PRICES IN RELATION TO THE WHOLESALE PRICE LEVEL

methods. The significance of a mass of individual figures cannot be grasped, but if they are summarized by numerical measures of central tendency and dispersion the detail is lost. Such detail can be supplied significantly only by graphic methods.

One of the fundamental problems is that of examining price data to judge their significance. Perhaps we want to know the reliability of an average computed from a number of quotations or from a record of actual selling prices. Or we may wish to judge the reliability of some news service quotation by comparing it on different occasions with more detailed data of actual transactions. For this purpose the use of a histogram to show graphically the frequency distribution of prices as compared with the averages or quotations is often very useful. Such charts serve to show whether the data are homogenous or whether they need to be broken down into some other basis of classification. Figure 1, for example, shows frequency distributions of the prices of carlot sales of No. 4 and No. 5 Yellow Corn at Chicago on a given day. It is apparent from these that some factors in addition to grade designations are of great importance in determining the selling prices.

A large part of the work in price analysis which has been done in recent years has concerned itself with the analysis of time series of prices and related data. The conventional time series analysis is commonly divided into three stages which deal respectively with trend, seasonal variation, and cyclical variation. Graphic methods are useful if not imperative in each of these three.

As a preliminary step in price analysis it is frequently desirable to chart price series both in terms of money prices and the corresponding series adjusted for price level changes. If there is occasion to plot the series on semi-logarithmic paper it will be found convenient to "deflate" the prices graphically. The procedure requires that the "deflator" series be charted on semi-logarithmic paper of the same size cycle. The price series to be deflated is then

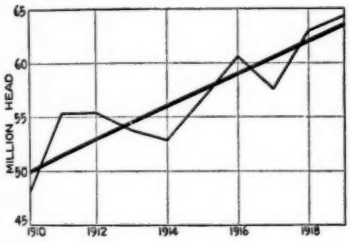

FIG. 3. NUMBER OF HOGS ON FARMS

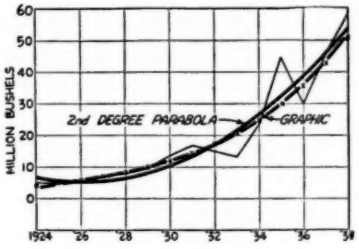

FIG. 4. SOYBEAN PRODUCTION AND TRENDS

plotted and for each point of that series, another point is placed above or below it by the same distance that the "deflator" series is below or above the 100 line. This is shown by figure 2. One "deflator" series is sufficient for any number of series to be deflated and if a scale is made up showing the deviations of the "deflator" series from the 100 line, it will be found that an original and a deflated price series can be charted in little more time than is necessary to chart the original series alone.

Figure 3 shows a time series with a straight-line trend fitted to all the data by the method of least squares. Obviously this is not a good fit for the data in question, as it does not meet the standard requirement of using the data from peak to peak or from trough to trough. A better trend would have been obtained by almost anyone using merely a pencil and ruler to draw in a trend line. No matter what the precision and amount of mathematical computation involved we cannot be assured of a well-fitting line of trend unless we give careful attention to the nature of the data. It is sometimes possible to do this by simply observing a column of

figures, but most people can judge far better what period of time should be included in computing a mathematical line of trend if the data are presented graphically. Figure 4 shows United States soybean production on an arithmetic scale with a graphically fitted trend compared with a computed second degree parabola. In my opinion the graphic trend is a much better fit. It closely approximates a logarithmic trend—the results of plotting a numerically calculated logarithmic trend being shown by the crosses at yearly intervals. Figure 5 presents the same data on a logarithmic scale with two trend lines. The heavy dashed line was fitted purely graphically with no calculation, while the light solid line is a least-squares line fitted mathematically to the data for 1924 to 1938. The location of a least-squares line for the years 1925 to 1938 is indi-

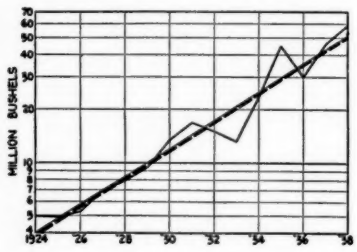

FIG. 5. SOYBEAN PRODUCTION AND TRENDS

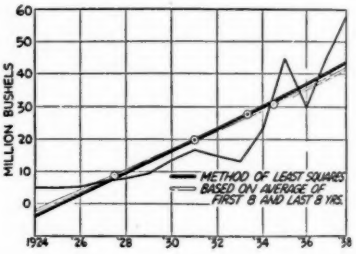

FIG. 6. SOYBEAN PRODUCTION AND TRENDS

cated by the two dots at either side of the chart. The graphically drawn trend is evidently a very good fit.

With economic data, better results can be obtained in fitting either linear or curvilinear trends by purely graphic methods than by purely mathematical methods. The best results, of course, can usually be arrived at by the combination of graphic presentation of the original data and the mathematical fitting of a least-squares trend.

It is commonly recognized that straight-line trends which closely approximate the least-squares line can be obtained with much less work by a method which is mostly graphic and which makes only slight use of numerical calculations. I refer to the method which obtains the arithmetic means of the first half and second half of the data by numerical procedure, and which then completes the process graphically by drawing a straight line between the two points thus determined. It is not generally known, however, that for both trends and other regressions, the straight line of least-squares can be drawn graphically by the determination of two

average points. This procedure however is not highly accurate because the two points so determined are usually quite close together. Trend lines drawn by both methods are shown in figure 6.

Various procedures are in use for calculating indexes of seasonal variation. Perhaps the most common "respectable" ones are the median link relative and the percentage of 12-month moving average methods. But even these are likely to yield misleading indexes if they are carried through without resort to graphic analysis. It is better to use purely graphic methods than merely to go through a particular routine of calculation.

We may take as an example an analysis of the seasonal variation in the Illinois farm price of eggs. Figure 7 shows by months the percentage which each month is of the 12-month moving average

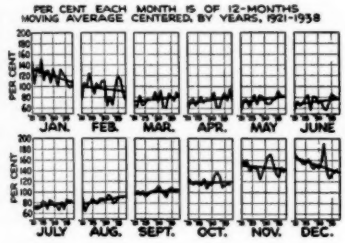

FIG. 7. ILLINOIS FARM PRICE OF EGGS

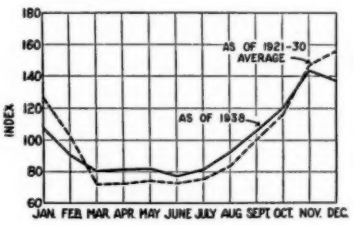

FIG. 8. TYPICAL SEASONAL INDEXES OF ILLINOIS FARM PRICE OF EGGS

arranged by months and years from 1921 to date. It is immediately evident from this graphic presentation of the data that there has been a marked shift in the seasonal variation of egg prices. What is a typical seasonal variation in one year is not typical in another. Obviously egg prices in January and December are not typically as high relative to the average now as was the case 15 or 18 years ago. Using the trend values for each of the months (as shown on figure 7) I have computed indexes of seasonal variation in egg prices as of 1921, 1925, and 1938. When these are compared with an index of seasonal variation computed by following the procedure used by the Bureau of Agricultural Economics in computing its indexes of seasonal variation in farm product prices, it becomes evident that the Bureau's index of egg-price seasonal is typical of conditions of 1925 or thereabouts, but far from typical of the seasonal in 1938. The difference between the indexes is indicated by figure 8.

Any serious analysis of seasonal variation should include provision for judging the significance of the seasonal index arrived at,

no matter how simple or how complicated the method of computation may be. This can best be done by some sort of graphic presentation showing a multiple frequency distribution of the percentages of the 12-month moving averages, link relatives, or other data. Furthermore such graphic methods can be used to judge which of the several methods is the better to use in a given problem.

Correlation is another of the major problems with which we have to deal in price analysis. It is, of course, possible to compute

TABLE 1.—THREE SETS OF DATA AND RESULTS FROM CORRELATING THEM

Year	Pairs of variables							
	1		2		3		4	
	X	Y	X_2	Y_2	X_3	Y_3	X_4	Y_4
1	95	86	105	66	80	70	54.5	23.6
2	135	96	55	32	100	60	44.5	50.6
3	75	76	95	100.5	90	70	74.5	46.6
4	165	86	135	88	200	150	54.5	75.6
5	95	96	95	49.5	60	80	94.5	75.6
6	45	16	165	110	80	60	104.5	75.6
7	55	56	75	76	110	50	94.5	93.5
8	125	96	125	112	70	80	124.5	95.6
9	55	46	45	50	90	60	169.5	95.6
10	105	96	55	66	70	70	134.5	117.6
Mean	95	75	95	75	95	75	95.0	75.0
	36.88	25.86	36.88	25.88	37.75	26.55	37.85	26.56
r_{xy}	.765		.765		.763		.765	
b_{yx}	.537		.537		.537		.537	
a	24.007		24.007		24.000		23.973	

correlation coefficients, regression equations, and various other measures of correlation and their standard errors without any resort to graphic methods.

Table 1 shows four sets of associated variables. Each of these sets has been correlated and the standard deviations, regression equations and correlation coefficients are as shown. It will be seen that all of these measures are almost identical for each of the sets. Nevertheless the significance or the lack of significance of the correlations is very different.

The real significance of the relationships of co-variation can best be shown by charting as is done in figure 9. Here we see that in case of the first set of data we have a curvilinear rather than a linear relation between the variables. When this is taken into account they are much more closely associated than is indicated by the coefficient .765. The second section of figure 9 indicates that

the relationship between the second set of variables is substantially linear and is consequently well represented by the regression equation. Hence the correlation coefficient really has the meaning commonly attached to a coefficient of that size. In case of the third set of data, it is apparent that the correlation results as they stand are really without significance in view of the distribution of the dots in the scatter diagram shown in the third section of figure 9. The inclusion of the fourth pair of values is responsible for a positive rather than a negative regression and unless some adequate explanation can be given for the difference between the regression of Y on X when only the other nine pairs of values are considered as compared with the regression when all ten are considered, the whole thing is meaningless.

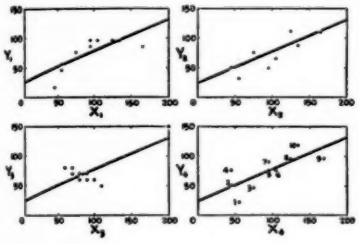

FIG. 9. SCATTER DIAGRAMS OF FOUR PAIRS OF VARIABLES

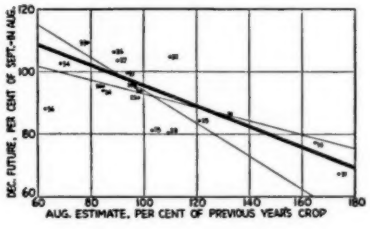

FIG. 10. CORN: DEC.–SEPT. FUTURES RATIO IN AUG. RELATED TO CHANGE IN CROP

The fourth section can be properly interpreted only if the sequence of the observations is taken account of. When this is done it becomes apparent that aside from trend interrelations there is a negative rather than a positive correlation between the variables.

There is corresponding need for the use of graphic methods in multiple correlation analysis. Curvilinear relationships, trends, and non-normal distributions of observations are quite as likely to occur in the use of multiple correlation as in that of simple or two-variable correlation. Indeed, for any given correlation problem they are more likely to occur inasmuch as more viariables are used for each correlation analysis, and with each new variable there is an additional opportunity for curvilinear relationships, trends, or seriously non-normal distributions to be involved.

Thus far in discussing the use of graphic methods in correlation, we have been concerned only with the need of such methods to display the data; that is, to show us certain facts about dispersion and inter-correlation which are not disclosed by the various aver-

ages as computed in numerical correlation. But what has commonly been termed the short-cut graphic method of multiple correlation combines a display of the data and graphic computation of regression lines. Using the term "graphic multiple correlation" in this sense, then, we may analyze its usefulness from the standpoint of how satisfactory the process is for each of these fundamentally different purposes.

If the least-squares criterion of fit be taken as a satisfactory one, there is no doubt but what the graphic method of multiple correlation suffers somewhat as compred with the method of computing least-squares regression lines. This is illustrated by figure 10. The wide solid line shows a regression fitted purely by eye, in which the attempt was made to approximate the least-squares regression of the ordinates on the abcissae. The two thin solid lines represent the two least squares regressions (ordinates on abscissae and vice versa) as determined by computation. Whenever there is a considerable scatter of observations, similar errors are likely to be made, for in visual fitting of regression lines there is a tendency to minimize the deviations measured perpendicularly to the regression line rather than the vertical deviations. There are, of course, other reasons for inaccuracy of this type of graphic fitting. It should be borne in mind, however, that there are times when it is desirable to minimize the perpendicular rather than the vertical deviations squared. Also the graphic fitting becomes more accurate as the scatter of residuals is reduced—as is usually the case in graphic multiple correlation. Just how closely any investigator can come to fitting regression lines which meet the least-squares criterion depends both upon the skill of the investigator and upon the particular data to be used. However, the graphic method of multiple curvilinear correlation is not commonly criticized because of failure to do this. Indeed, a recent article by Malenbaum and Black has criticized the graphic method partly because it tends to minimize the residuals. This criticism is valid only when the squares of the residuals are minimized through the application of faulty types of regression lines. It is, consequently, a criticism not of the graphic method itself, but of the ignorant or injudicious use of that method. Minimizing the sum of the squares of the residuals is a desirable thing in either graphic or numerical methods of fitting regression lines. It is the very thing which the usual formal methods accomplish best for the type of curve they fit. Any graphic method which seriously fails to do it would really be subject to severe criticism.

On the other hand, the methods of calculating regression equations numerically, if they are adequately supplemented by graphic

methods of displaying the various interrelationships of the data, can do everything that graphic methods can do. Their faults are that they are time-consuming and difficult to carry through—especially when curvilinear relationships are involved. For many people the results are also difficult to comprehend.

I quite agree with Malenbaum and Black as to the possibilities of misuse of the graphic method. Many readers however have gained the impression from their article that the formal mathematical methods are better and safer. With this inference I wish to disagree. I hold that in the hands of the average price analyst who is primarily an economist and not a statistician, the graphic method is bar better because he has a better opportunity to see and understand what he is doing. Not only this, but even in the hands of the expert statistico-economist the purely graphic methods are extremely useful for they lend themselves better to the interplay of induction and deduction which is so highly essential to truly progressive scientific work. This is especially true where time series data are used as is the case with the majority of price analyses. With time series and often with geographical data it is not possible to use statistical inference except on what may be termed a "minimum error" basis because we have no reliable way of knowing how nearly the data studied correspond to those of a longer period of time or of a different geographical area. We must consequently turn to an attempt to arrive at causal relationships and we must analyze our data and methods from the standpoint of whether they are likely to yield such relationships.

When we consider graphic methods from the standpoint of their two fundamental purposes, (1) as a means of calculation and (2) as a means of display, we must recognize that their importance as a means of calculation is waning. With the increasing use and cheapness of various mechanical methods of calculation, numerical calculation has become easier and is tending to supplant more and more the graphic method of arriving at the same result. But this does not mean that graphic methods can be dispensed with in price analysis if one merely has enough calculating machines of different types. I know of nothing that has been invented which tends to supplant the need for and the use of graphic methods to display data in the process of analysis. Of course, it is frequent enough to find pieces of work which have been done without the use of graphic methods, but the very results which are obtained, the mistakes which have been made as a result of omitting the graphic method of display, only serve to emphasize its need.

GRAPHIC METHODS USED IN PRESENTING AGRICULTURAL ECONOMICS INFORMATION

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In applying the graphic method to agricultural statistics the statistician or economist should have a sound appreciation of its possibilities and know where it can be used to the greatest advantage in each case. He should recognize its possibilities as a method of analysis. Graphic methods can be a statistical tool of greatest value when every graphic presentation is designed to perform some definite service. The dominating claim for the use of illustrations is to instruct and influence. Some charts and maps, as is well known, are either poorly constructed or, in rare instances, are deliberately made to deceive. They are not dealt with, here.

Many common mistakes are made in statistical presentation. Three that are most generally made and are especially important to avoid are:

1. The use of a few favorite types of charts, more or less without regard to the nature of the facts shown.
2. The use of too much imagination in the development of charts, making them so specialized and complicated as to be difficult to understand.
3. The use of charts and maps in groups each on a different scale when all should be on the same scale and the use of different-sized cuts to illustrate charts of the same general importance.

The importance of simplicity can hardly be overstated. The design of a chart should take into account the limitations of the eye. Of the three methods of portraying values—length, area, and volume,—length is by far the most easily gauged by the eye. All values should be shown by this one dimension if possible. Area, involving two dimensions, is evaluated much less accurately by the eye; and volume, involving three dimensions, should not be used if it can be avoided. Angles and ratios are ordinarily evaluated less accurately than is length, but they are becoming moderately reliable because of familiarity through increasing use.

Charts, maps, diagrams, and photographs may all play an essential part in the illustration of agricultural economic information. All the illustrations used in publications of the Bureau of Agricultural Economics will fall in the chart, map, diagram or photograph groups, or an illustration may be a composite illustration made up of parts of two or more of these groups.

The question as to whether a chart, map, diagram or photograph should be used to illustrate a certain point seldom gives any trouble

because of the marked difference in the general form of each but occasionally the question of whether a chart or map should be used may arise when the data can be presented through either medium. It is a good practice to use the map when the geographic importance of the data is very significant.

Charts

Charts are used for the majority of the graphic presentations of economic information. They are composed of four general classes.

1. The single numerical-scale charts usually referred to as comparative or horizontal-bar charts.
2. The bi-numerical scale charts which consist of the time series and frequency series.
3. Charts with various numerical scales, other than time and frequency series.
4. The area and volume charts using circles (whole and divided into sections), squares, and other two-dimensional figures, as areas while volumes are represented by cubes and other three-dimensional figures.

Comparative or Horizontal-Bar Charts

Comparative bar charts are constructed with a horizontal scale that measures the magnitudes of the bars while the vertical dimension is used to list the items referring to the bars.

The horizontal-bar chart affords ample space at the left to list the items and other data referring to the bars. When only two or three items are to be compared the horizontal-bar chart uses little space, whereas a vertical-bar chart consumes much more space. The number of horizontal bars in charts should never be so great that the tabulated information at the beginning of the bar will not be clearly legible when reduced. The width of the bars should be kept uniform. When it is necessary to make unusually wide bars because only one or two are used and it is wished to have an illustration of convenient size, it is generally desirable to shade them gray by the use of cross-hatching rather than have them appear in bold black relief.

The omission of the zero line is never justified because of the inability to make comparisons when a definite part of a series of bars of variable lengths have been omitted.

The lengths of bars should be in a continuous line and not folded back and forth. Scales for horizontal-bar charts should be placed at the top of the chart just above the top bar, but outside the grid area. They should clearly indicate the unit of measure, such as thousands of dollars, dollars per capita, etc. Dollar signs and other symbols should not be used to indicate units. When a horizontal-bar chart extends from the top to the bottom of the

vertical dimension of a page it is permissible to use two scales, one at the top and the other at the bottom. When only one scale is needed it should always be at the top.

Time-Series Charts

Time-series charts are those that portray the values of statistical variables over a period of time. Such a period of time might be hours, days, weeks, months, years, or any other period no matter how long or short. In general, fluctuations of an economic time series are either a general trend (long time or secular), seasonal variation, cyclical variation, or an irregular variation.

A large percentage of all data portrayed consists of both the independent and the dependent variables. The variable which changes either positively or negatively by arbitrarily chosen increment values is always plotted on the X axis, running horizontal, and is called the independent variable. The other variable is the dependent, and is plotted on the Y axis, running in vertical position.

In time-series charts the time is always the independent variable. That is, the time units should be indicated at the base of the chart and run from left to right as time passes. When space does not permit the indication of each time unit, alternate units or every fifth or tenth unit can be used. Grid lines indicating time units should extend only from base to top of chart where correct interpretation of data demands the same units. In many cases the type of data itself determines directly what lines shall extend through the field, such as, daily vs. monthly, monthly vs. yearly. Grid lines should represent some equal quantitative unit of the scale on which the data are to be plotted. The range of data should determine the scale unit interval to be used.

The number of curves to be plotted should be no more than can be easily interpreted throughout the field; that is, if more than two curves are plotted they should be in different areas of the field, and not superimposed and interrelated to such an extent that their identity is impaired.

The dominating unit of a chart should be the lines portraying the data on grid area. Curve identities, years, scale, and title matter should be of secondary importance only. Base line should be next to curves in relative width since this line represents a base from which the quantitative values of the plotted curves are derived.

Where the quantitative distance between the zero base and the curves is not the significant factor in the portrayal, the zero base line can be omitted, and the bottom of the grid can be indicated

by a light jagged line immediately below the scale grid line that clears the lowest point on the curve. In plotting data to a base other than zero, the base used should be definitely indicated on the chart. The relative importance of the curves should be in accordance with the data; that is, solid line for the most important, and various designs of broken lines for those of secondary importance.

In general, the title of the chart should be as brief as possible and at the same time clearly state the subject matter of the chart. The title should not be interpretive.

Regularity of unit space to unit time should be maintained as far as possible, the exception being in large jumps in time interval when no data occur. The space can then be condensed considerably without ruining the time element effect.

Ratio Charts

Ratio charts, commonly referred to as semi-logarithmic charts, are a very important part of time-series charts. Ratio charts are used:

1. To compare proportional rates of change.
2. To show the relationship between two or more series of data which differ widely in amount.
3. To show the significance of a given change from the magnitude of the base from which the change is measured.
4. To plot absolute magnitudes and at the same time have the comparison of relative changes, for example; 100 on 100 base, 1,000 on 1,000 base, 10,000 on 10,000 base will all show of equal importance.

A ratio chart is made on semi-logarithmic paper, which is ruled with a logarithmic scale on the vertical axis, but with an ordinary arithmetic scale for horizontal. All the standard rules regarding the making of line charts apply to ratio charts with the exception that no zero base line appears on a ratio chart. Ratio charts do not show actual changes in value of data. They will be very misleading to the average reader if this limitation is not well brought out in the discussion of the chart. Ratio charts are excellent for the purpose for which they were devised, but should be used with caution, as they are easily misinterpreted by the average reader.

Frequency Charts

Frequency charts are used to portray the frequency with which the phenomena occur under given conditions.

A chart displaying frequency distributions differs from one in a time series in that the data are such that time is not the independent variable. On a frequency chart the class-intervals occur in the same position as time-intervals on a time-series chart. That

is, the class-intervals are plotted along the X-axis, and the corresponding class frequencies along the Y-axis.

In a time-series chart we are interested in studying the chronological variations in the value of the variable; for instance, we may wish to study the production or price of wheat over a period of years. In a frequency chart we desire to determine how many times each value of a variable is repeated and how these values are distributed.

The frequency charts, whether they are called frequency polygons, frequency curves, or rectangle frequency charts (histograms), are all prepared in the same general form. The horizontal scale or magnitude scale is always used to indicate the class intervals and the vertical scale is set up to show the frequencies that occur in each class interval.

The vertical scale should always have a zero as the base line if the chart is to be considered a real frequency chart. Charts are made and published which do not show this zero line, and the excuse given for not including it is the same as the one given when a time-series chart has no zero base. That is, the author is interested only in the greatest differences he can show in the fluctuation, and is not interested in the entire area under the curve.

The zero line of the horizontal scale is a matter of judgment to a great extent. It is omitted entirely too frequently, and in many such cases it could easily be included. In frequency series where the position of the horizontal zero is exactly ascertainable and where the dispersion is not too small in proportion to the measure of central tendency, the horizontal zero should be included in the chart. The size of the average carries a greater significance when it can be compared with its horizontal distance from zero. Without the horizontal zero the chart is not truly a complete graphical presentation of the central tendency, nor ot its relationship to the distribution.

Class intervals on the horizontal scale should be of uniform size. This enables direct comparison and easy plotting. In choosing the size of class interval for any data, it is always desirable to make several trials before deciding. Less than 10 intervals are seldom satisfactory, while more than 25 are rarely needed.

In preparing data for frequency charts, one essential is to arrange the figures in order of magnitude. This array should be closely studied and various sized class-intervals might be selected and roughly plotted to determine which size of class-intervals shows best the central tendency and general frequencies throughout the magnitude scale.

Area and Volume Charts

The circle and its component parts, is the most commonly used chart of the area and volume group and is commonly referred to as a pie diagram. Pie diagrams or component-part diagrams are used to present a number of individual items in relation to their sum.

In constructing a pie diagram the data should first be expressed in percentage form and the various segments should then be laid out with the help of a percentage protractor or degree protractor. If we consider a pie diagram as similar to the clock and arrange the sectors in relative importance from the top of circle to the right, then comparisons with one another are greatly simplified. The most important segment should be made black.

Proportionate sizes of two or more values can be shown by variations in the areas of individual pie diagrams, remembering that areas of circles vary according to the squares of their diameters. Pie diagrams are less effective than bar charts in portraying most data because the eye measures length more easily than angular width.

Maps

Maps form an important group for consideration because of the skill required and the time consumed in the preparation or compilation of this type of illustration. Compilation of topographic or physiographic maps usually requires considerable research even though the area may have been prepared in map form at some previous date. Changes in information, the projection of the map, and additional detail desired in many cases, render useless any previously prepared map.

In the preparation of statistical maps, a political or other outline map can be utilized as a base, on which is placed the graphic device necessary to complete statistical presentation. Statistical maps cover a wide variety of types that are more composite than distinctly defined. The dot map and the cross-hatch map are two distinct types, worthy of comment.

The graphic presentation of statistics by the use of the dot map is important. It is intended to show quantity as well as actual geographic distribution. When considering the use of dot maps for portrayal of any subject it is well to have the following points in mind:

1. *Scale*—whether the scales should be independent of each other in order to get the best visualization or whether they should all be alike because of their similarity and the desirability of comparison.
2. *Size of dot*—the size of the dot itself is very important because the size used practically determines the final appearance of the map es-

pecially when it is reproduced in print, often in reduced size. Choosing the size of dot requires consideration of the scale to be used. It is necessary to decide whether the final map will give the best results if a large scale and large dots are used, or whether the small scale and smaller dots will present the best picture. The selection of a large scale and large dots is seldom the best course but when the figures or dots bunch in one particular center and are of minor importance elsewhere it is sometimes necessary to resort to a large scale and large dots to create the desired result.

3. *Dotting*—one should be extremely careful in preparing dot maps to make an even contact of pen with paper in order to get symmetrical dots. Keeping the pen filled to about the same level all the time is very desirable. Dots should not be placed in rows or be so bunched as to form a design of any kind.
4. *State totals*—when data for dots are by counties and the map will finally be reproduced showing nothing smaller than a State unit, it is necessary to adjust the dots to check with the number necessary to agree with the State total. This can be done by grouping counties together that independently would not have enough for a dot, when more dots are needed to check out on the basis of a State total. Rarely if ever will it be necessary to cut out some dots in order to check correctly with the State total. However, should some dots have to be omitted this can be done by dropping a dot here and there where several counties have to be taken together to get the dot in the first place.

Cross-Hatching and Shading

Cross-hatch maps are maps on which patterns of dots, dashes and lines are used to show spacial distribution of various magnitudes. Some typical instances so mapped are percentage of total land in farms, percentage of improved land in farms, population per square mile, rainfall in inches, yields per acre of various crops, and value of farm land per acre.

Since the variation in magnitudes is usually great for an area, grouping of the variations is necessary in order to show patterns with enough distinction between them for visualization of their differences. If the magnitudes are not grouped the use of a cross-hatch map would be impossible. The general practice of forming the magnitude classes is to have them of equal intervals, that is, one class less than 10, another 10 to 20. Although this is preferable it is not always possible, and intervals of different sizes must be used in many cases. When intervals of various sizes are used, the cross-hatch pattern should be selected to represent best the differences of intervals considered from the middle of the interval or class.

Until recently the task of preparing one of these maps has been rather difficult. Now several firms have published screens that can be adhered to the maps to save the drafting work. When purchas-

ing such screens extreme care should be taken to provide for reduction of the original if reproduction in published form is involved.

Standardized Drafting Technique

To the draftsman who is actually making the illustration, standardization of technique is of great benefit. The draftsman, as a rule, is not a statistician and should be depended upon only to make the chart as directed. If a carefully planned layout is given him, together with all sizes of lines and lettering wanted, he can devote himself to the actual mechanics of the drafting. If all charts, then, are made by the same pre-determined pattern, either by the same draftsman or by several, the final charts will be uniform and will portray the data in the most effective ways.

Standardized technique increases the speed with which the chart can be made. The time required for a draftsman to determine the general layout of a chart and the size of lines and lettering, is considerable. Moreover, he often has not the knowledge of the subject matter to determine the most effective style of chart to be made. As a rule, the draftsman should not be required to know all the principles of graphic presentation. His job is to follow directions and if a complete set of directions is given him, his work is more efficient and effective.

All charts should be accurately checked when completed, that the portrayal may be exactly in accordance with the data. Before sending them to the printer, the size to which each is to be reduced for publication is marked on the margin. Not all charts can stand reduction in size. To determine how far a chart can be reduced a reducing glass may be used.

In an organization that employs several draftsmen, a record of the time required to make each chart will make it possible to draw up a budget of costs. This time record usually discloses the fact that some draftsmen have a natural ability to do certain kinds of jobs well, such as lettering or dotting maps. If the production of the unit is to be kept at a maximum and yet satisfactory work is to be turned out with few errors, jobs should then be assigned according to each draftsman's ability. If maximum production is not important and if a primary purpose is to develop all-round draftsmen this is not the plan to follow.

In closing it should be emphasized that the question of possible later reduction and reproduction of the illustration should always be kept in mind for this affects many of the decisions to be made. It should be further emphasized that in laying out a graphic illustration its possible relation to other graphic illustrations should always be kept in mind.

DEVELOPMENTS ARISING OUT OF TRIAL CENSUS IN 1938

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A trial census, designed to test a proposed agricultural schedule for the 1940 Federal Census, was made during January and February 1938 by the Agricultural Division of the Census. The field statisticians of the Division of Crop and Livestock Estimates of the Department of Agriculture performed the actual work of enumeration and furnished the Bureau of the Census written reports containing suggestions for investment based on their experience with the schedule. The completed schedules were edited and tabulated in the regular way by the Census Bureau.

No specified plan of selection of farms was followed as the purpose of the trial census was to correct and improve the Agricultural Census schedule. The statisticians took schedules in several different counties which offered examples of difficulties that would be encountered in taking a complete census. Any light that might be thrown upon the theory of sampling by this survey was, therefore, entirely fortuitous. In all, 3,000 farms were enumerated in 96 counties.

The importance of framing questions in such a way as to get the most accurate answer cannot be over-emphasized. A poorly worded question may induce inaccuracies in the reply that may be far greater than the errors arising from a faulty method of sampling Likewise, inaccuracies in universal enumeration may be as great as the deviation from a true figure that occurs when an estimate is made from a sample.

For example, the questions concerning "farm slaughter" were dropped from the 1935 census schedule because the results obtained in the past had been so very unsatisfactory. A change in wording from "slaughtered" to "butchered" in the trial schedule gave excellent results. The selection of items in line with what the farmer knows and can tell the enumerator is essential both in complete enumeration and in taking a sample census.

We were all surprised and extremely well pleased with the consistency shown in the figures tabulated from the "trial" census; for example, the percentage distribution of each year's model of automobiles on farms checked closely with the actual number of automobiles manufactured each year from 1929 to 1937. The demand for current information was so great and the results of the tabulation appeared so reasonable that a series of releases were

issued by the Census Bureau showing indications of change from 1935 to 1938 in tractors on farms, farm population, cooperative purchases, farm radios and other items of popular interest.

The demand for these few and unimportant releases was equal to that for regular Census material. This demand shows the need on the part of the general public and particularly of manufacturers and distributors of merchandise to farmers, for more frequent information than is possible to obtain by a Census enumeration every 5 years. A program for a partial census in intercensal years was outlined and agree upon by the Departments of Agriculture and Commerce and may be seen in the 1937 report of the Secretary of Commerce (p. 21).

The Trial Census has fulfilled our expectations of showing up errors in the form and content of the questions, suggested improvements in the inquiries, furnished a base for the elimination of unsatisfactory questions that depended previously upon personal experience or judgment only, and has offered a splendid opportunity for training personnel and for reducing costs. It has been of great benefit in preparing for the coming Census and in improving and speeding up the Census work all along the line, from preparation of the schedule to the tabulation and summarization of the result.

DEVELOPMENT OF PARTIAL AND SAMPLE CENSUS METHODS

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The need for better and more timely statistics relating to agriculture is so well recognized by this audience that all we need do is to define what is meant by better statistics. By better statistics is meant those that have: 1. Higher degree of accuracy (published statistics); 2. Wider scope, that is, including information not now covered or only partially covered by the Federal Census; 3. Greater geographic detail, especially in basic statistics used in administration of national action farm programs.

Furthermore, greater emphasis is needed on dynamic changes taking place in agriculture, including more frequent statistics than are now available from quinquennial and decennial censuses. Better integration of special surveys made by colleges, experiment stations, and other Government agencies with official statistics would contribute to the betterment of statistics relating to agriculture.

The methods of estimation now employed by the Department involve the use of (1) quinquennial and decennial censuses as periodic "bench marks" and (2) sample data obtained from voluntary crop correspondents, Rural Carrier Surveys, and use of crop meter. The sample data are used either on the absolute level, as is the case in making estimates of yield per acre, milk per cow, and eggs per chicken, or in a relative sense to indicate change from the previous year or change from the base Census year to the current year. The annual asessors' enumerations, in the States where these are made, furnish a basis for truing up estimates during intercensal years.

Widening the Scope of Agricultural Statistics

The first step in widening the scope of agricultural statistics is to include a larger number of items on the quinquennial and decennial census schedules. The limit of the number of items that can be included on one schedule, however, has been reached. In fact, it was exceeded on the 1930 Agricultural Census schedule.

The Bureau of the Census is under great pressure to include many more items on the agricultural census schedule than is practicable. The schedule, however, must be kept within such limits as will permit the enumerator to cover all the items at one

interview with the farmer. The greater the number of items, the greater the fatigue of both the farmer and the enumerator and the less accurate the enumeration and the greater the number of items omitted by the enumerator.

The insistent demand for increasing the scope of the agricultural statistics obtained by the Federal Census could be met by using a split schedule and employing the principles of sampling for, say, 50 per cent of the items on the schedule. Briefly the procedure would be somewhat as follows:

1. Designate certain items relating to population, tenure, land use and crop acreages, numbers of livestock, farm labor, etc., as basic items to be included on the "A" part of the schedule. These items would also include highly variable items and those found on only a small proportion of the farms, because of the difficulty of securing an adequate sample of such items.
2. Designate as secondary items two, three or four times as many other items as would be practicable to include on any one schedule.
3. Divide these secondary items into 2, 3 or 4 groups. One group would be combined with the basic items in making up the "white schedule." This schedule would then be taken in only one-half, one-third or one-fourth of the enumeration districts. The remaining groups could be combined with the basic items in the same way on other colored schedules—light blue, buff and pale green.
4. Divide the enumeration districts within each county into 2, 3 or 4 groups, applying the principle of stratified random selection. The white schedules would be used in one group of districts, the blue ones in another group, etc.
5. Make estimates for the secondary items from the 50, $33\frac{1}{3}$, or 25 per cent sample of enumeration districts, following improved statistical methods. If county estimates are desired, only two groups and a 50 per cent sample of enumeration districts should be used. If estimates for type-of-farming areas comprising 3 or more counties would serve the purpose, the $33\frac{1}{3}$ or 25 per cent sample, and corresponding increase in items, could be utilized.

A partial census of secondary items, using the split schedule, would permit broadening the scope of agricultural statistics based on Census data by from 50 to 250 per cent and at little increase in cost. Such an innovation would be contrary, of course, to Census tradition of presumably 100 per cent coverage of all farms for a given item; it would necessitate use of methods of estimation; and

it would give rise to new and perhaps difficult problems of administration. It is hard to conceive, however, that the administrative problems would prove to be insurmountable.

Partial Census in Intercensal Years to Broaden Scope and Increase Accuracy of Statistics of Commercial Fruit and Truck Crops

Highly localized truck, fruit and nut crops can never be satisfactorily handled on a general Census schedule because of the detail essential to accuracy. Detailed supplemental schedules for areas growing these crops so increase the length of the combined schedule as to lead to a poor census. Numerous problems arise in connection with a proper enumeration of these specialty crops. Succession cropping (growing of 2, 3 or perhaps 4 crops on the same land in one season), various types of containers and methods of sale, and various uses of the product—as for fresh consumption, processing, etc., are all problems that must be met in designing a schedule. In the case of tree crops it is important that we obtain information by age groups and varieties.

These crops have never been enumerated satisfactorily by the Census; they are either omitted in large part from the schedule, as in 1925 and 1935, or neglected in actual enumeration, as in 1920 and 1930, or both. As a result, the Department's estimates of these crops are subject to considerable criticism because of their inaccuracy and incompleteness—and properly so, as they do not fully meet the needs of the growers and handlers of these crops. In the aggregate these crops rank in importance in our agricultural economy with such major cash crops as cotton, wheat and tobacco. Greater accuracy is needed in the Census bench mark data used as a base by the Department in making annual estimates of these crops.

Approximately the equivalent of 500 counties would cover about 80 to 90 per cent of the commercial production of some 30 to 40 truck, tree, and fruit crops. In planning a partial census of this kind, the total of approximately 500 counties could be divided into 4 groups with a separation along State lines. One group could be taken covering the 1940 crop, the second for 1941, the third for 1942, and the fourth group covering 1943 crops. This same rotation could be carried forward in future intercensal years. The project should be the joint responsibility of the Department of Agriculture and the Bureau of the Census. The Department of Agriculture could be of great assistance in supervising the field work of actual enumeration.

A Nationwide Annual Sample Census to Increase Accuracy and Permit Greater Geographic Detail in Annual Estimates and to Furnish a Basis for Selecting Farms for Special Detailed Economic Surveys

Limitations that arise from the use of sample data obtained from voluntary crop correspondents are readily apparent. Such a sample must necessarily be selective of those farmers who are willing to report. Consequently the sample of voluntary returns is decidedly biased. This bias is especially serious with economic data relating to the farm as a unit of operation—crop acreages, livestock numbers, farmers' receipts, expenses, income, credit uses, etc. The use of so selective a sample in making estimates is fully as bad as attempting to draw conclusions from old-fashioned systematically arranged experiments that are not replicated or randomized. In neither case do we have a basis for determining the precision of the estimates or the conclusions reached.

A second serious limitation, especially from the standpoint of making estimates for areas smaller than States, is the inadequate size of these voluntary samples. Data relating to individual farms are highly variable and comparatively large samples are essential if serviceable precision is to be obtained. The smaller the area for which the estimate is to be made, the more serious is the inadequacy of existing samples.

A third defect of present sampling methods is the fact that no direct information can be obtained on the amount of land going into or out of agriculture from year to year.

In view of the serious limitations of the voluntary sample as a basis for current estimates, it is time that a more objective method of sampling be developed that will avoid so far as possible the selectivity and inadequacy inherent in the voluntary sample from farmer correspondents.

The methods employed in making special surveys, such as farm management, credit, taxation, and consumer purchases, also need revision in the light of modern statistical principles and practice. At the present time it is customary to select (subjectively) a so-called representative area equal in size to a township or a small number of townships and to attempt to cover each farm in this small area. Sometimes two or three such areas in a type-of-farming region are surveyed. These methods are familiar to most of you. In recent years some summarization has been made of data obtained from cost of management routes, such as in the recent Illinois Bulletin No. 444.

With either type of study the research worker is usually very

careful to indicate that his conclusions apply only to the farms covered by the survey. He does, however, usually include a map showing the area surveyed in relation to the much wider area for which the user of his results will probably generalize. In fact, the Experiment Station director who approves the project for a special survey of this kind no doubt assumes that the conclusions drawn from the small area will be valid for a much wider area; otherwise, how could he justify such intensive work on so few farms?

Experience in other fields of sampling indicates that no matter how carefully one's judgment is used in selecting a sample, the sample usually is badly biased from the standpoint of representing the larger universe of inquiry. In fact, this bias is surprisingly high and is therefore disconcerting. There is need of developing methods for taking surveys that will utilize all available information in stratifying the universe from which the sample is to be drawn but which involve no use of human judgment in the selection of the individual observations—farms or small blocks of farms—to be taken within the strata.

The sample of farms obtained by an annual sample census would provide a basis for the stratification of farms within a type-of-farming area or other geographic stratum. It would then be possible to use these farms in one or more of these strata for special intensive surveys and studies. Generalizations could be made from such a sample for a given kind of farm in a type-of-farming area. This method, known as "double sampling," could be used to excellent advantage for farm management studies.

Methods for Taking an Annual Sample Census

A sample census, or enumerated sample as it might be called, is a hybrid in that it (1) involves obtaining information from a farmer by a personal interview by a field man or enumerator, as in taking a regular census, and (2) provides for taking only rigidly specified farms or blocks of farms as a sample within a geographic area rather than all the farms.

The development of efficient methods for taking a sample census or enumerated sample involves making decisions concerning:

1. The objectives in taking the sample; that is—(a) The phenomena or items to be sampled and estimated; (b) The geographic area or "universe of inquiry" for which estimates are to be made —county, type-of-farming area comprising several counties, crop-reporting district or State; (c) The degree of precision required or desired in the estimates to be made from the sample data.

2. Method of estimation to be used—(a) Equalization or ex-

pansion of sample to 100 per cent; (b) Estimates of change from current year to previous year and/or base year.

3. Kind and size of sampling unit, such as (a) Individual farm; (b) A section of land or small block of farms equivalent in area to approximately a section; (c) A 2-, 3-, 4-, or more, section block or its equivalent in farms; (d) A block of farms along a road or system of roads—"route block" representing a day's work on the part of the enumerator; (e) A township or minor civil division or Census enumeration district.

4. Method of selecting the sampling units, which might be—(a) Subjective—involving use of judgment solely (non-statistical); (b) Purposive; (c) Random; (d) Stratified random.

5. Size of sample in terms of number of observations.

Objectives: The choice of phenomena depends in part on the dispersion of the various phenomena under consideration. Many items have such high dispersion that even a 50 per cent sample in a type-of-farming area might not be sufficient to give serviceable accuracy. Usually the variability of a phenomenon is highly associated with the proportion of farms having this phenomenon—the smaller the proportion, the higher the variability. Natural phenomena such as yield per acre, or production per cow or per hen, have less than half the dispersion of economic phenomena such as acreage of a given crop, numbers of livestock, farm receipts, expenses, and income. Production items usually rank high in dispersion as they include dispersion of both the acreage and the yield per acre. These principles hold true whether the sampling unit is as small as an individual farm or as large as a township.

The degree of precision desired in an estimate to be made from a sample depends largely on the use to be made of the estimate. Precision depends primarily on size of sample, dispersion, and effectiveness of the stratification process. The percentage of the universe included in the sample influences precision only slightly when the samples are only a small percentage of the total universe.

A 10 per cent sample has less than 5 per cent more precision than a 1 per cent sample when both samples have the same number of observations and are drawn from a universes with the same dispersion. A 25 per cent sample has only about 13 per cent more precision than a 1 per cent sample, number of observations and dispersion being the same. Restricting the area to be sampled to a specified number of sampling units increases precision materially, however, when the smaller area has appreciably less dispersion than the larger one. Stratification is likely to increase precision considerably, especially with small samples.

In deciding upon the phenomena to be sampled, consideration should be given to whether or not the farmer (1) knows the answer or can make a good guess regarding it, and (2) is willing to give the information to the enumerator. Items such as eggs produced or sold during the last year, and value of garden and livestock products, cannot be answered satisfactorily in most cases because the farmer does not know the answer and usually he is reluctant to attempt to make a guess. Farmers frequently object to giving information concerning personal indebtedness, use of credit, income from non-farm investments, etc.

The shorter the schedule and the simpler and more direct the questions, the less the fatigue of both farmer and enumerator, the larger the number of schedules that can be obtained per day, and consequently the larger the sample and the smaller the error in the resulting estimates. Keep the schedule short and limit the items as much as possible to current information.

Method of Estimation: When a sample is available for only one year, one method of estimating the population is available to the statistician—the equalization or expansion method. In the case of a sample farm census several different factors might be used in equalizing the sample to 100 per cent—number of farms, acres in farms, or total land area.

When samples are to be taken in successive years and a complete enumeration is available for the first year, two alternative methods of estimating are available. An independent sample may be drawn each year and each annual sample equalized to 100 per cent, or a sample of farms may be drawn the first year and the same farms used as the sample in succeeding years. This matched or identical sample is used to estimate change or differences from year to year. This estimate of change is applied to the complete enumeration taken in the same year the first sample was taken. Change or difference may be estimated from a matched sample with higher precision than from independent or non-matched samples, especially when an item is highly correlated from one year to the next. For example, the acreage of corn is highly correlated from year to year on the farms of the Corn Belt. Farms having large acreages of corn one year are likely to have large acreages the next year. On the other hand, the series of independent (equalized to 100 per cent) samples is more likely to be accurate than one sample used for successive years.

The advantages of both methods could be secured by drawing 5 random samples independently (replacing the first sample before the second is drawn) from the complete enumeration made in the Census year. One sample would be used for one intercensal year

only and the data obtained matched with the Census data for the same sample. An estimate of change or difference from each year to the Census or base year would be made and applied to the total obtained by the Census. The series of estimates for the 5 years, based on 5 independent yearly samples, could be expected to be more accurate than a series of estimates based on only one (matched) sample carried from year to year throughout the 5 years.

Kind and Size of Sampling Unit: Obviously the schedules must be taken from the persons who operate individual farms. The sampling unit may be either a single farm or two or more farms together. A township of perhaps 150 farms might be taken as a sampling unit. The larger the number of farms included in a block as a sampling unit, the lower the statistical efficiency per farm. Conversely, the individual farm is more efficient statistically than two adjacent farms taken together as a sampling unit. A recent study showed that a 10 per cent sample of sections was as efficient as a 50 per cent sample of townships used as sampling units.

A small block of farms, such as the farms with farmsteads within a specified section (half section or quarter section), taken as a sampling unit has the obvious advantage that variation as to number of farms and size of farms is automatically allowed for in one part of the universe as compared with another.

The route sample has the advantage of minimizing the amount of travel per farm, especially when the block of farms laid out along a road and connecting side roads is sufficient in size to comprise a day's work for the enumerator. It is highly important in laying out route sampling units to strive for maximum variability in farms along the routes. The greater the variability of farms within the sampling units, the less among them, and hence the greater the precision.

Methods of Selecting Sampling Units: Of the four methods of selecting the sampling units in taking a sample census—subjective, purposive, random, and stratified random—the first is really non-statistical in that no basis is provided for determining the precision of the sample from an internal analysis of the sample data. Selectivity and bias cannot be kept out of a sample drawn from sampling units that are picked subjectively. When the agronomist insists on using his knowledge of the plants that he can readily observe in his field plots—a knowledge that is much more accurate than any person is likely to have of the farms over a county or State—he usually finds that his subjectively selected sample is badly biased and practically useless for scientific purposes.

Purposive selection has been defined somewhat differently by dif-

ferent writers.[1] Neither time nor space permits a discussion of purposive selection here. It is enough to say that research to date has not shown any "control" factor that shows significant correlation with more than one or two of the 50 to 100 items that are likely to be included on a sample census schedule. Furthermore, if any such control factor is discovered it probably would be possible to use such a factor as a basis for stratification. If such were the case, the method of stratified random selection would no doubt be more convenient.

Most people rebel at the idea of *random selection*. Why should we not use our knowledge of local conditions in selecting the farms to be included in the sample, they ask. Obviously no useful information should be ignored. It is all a question of how it can be used to best advantage. There is no question that random selection has tremendous advantages over subjective selection. On the other hand, in most problems of sampling a certain amount of stratification increases efficiency materially.

It is possible to use available knowledge about an area, region or State to stratify the area geographically into subuniverses before selecting the sampling units as nearly at random as possible within each stratum. This method of sampling is known as *stratified random selection*. It seems to be a happy combination of the systematic application of the principles of purposive selection and purely random selection. A recent study shows that the use of a grid type of stratification such as a township within a county may increase the efficiency of a sample from 25 to 50 per cent.

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[1] Bowley, A. L., "Measurement in the Precision Attained in Sampling." *Bul. Inst. Internatl. Statis.* t. 22, (3), Rapports, Communications et Mémoires, Annexe B. p. [6]–[62]. 1926.

Neyman, Jerzy. "On the Two Different Aspects of the Representative Method: The Method of Stratified Sampling and the Method of Purposive Selection." *Jour. of the Roy. Statis. Soc.*, XCVII (4), 1934.

RESULTS OF FOUR METHODS OF SAMPLING INDIVIDUAL FARMS

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Since January, 1937, the Central Statistical Board, Bureau of the Census, and Bureau of Agricultural Economics, have cooperated in studies designed to test various sampling procedures that might be used in making surveys of agriculture. Assistance in this research on Sample Farm Census methodology has also been had from the Departments of Economics of Iowa State College and Kansas State College, from the Works Progress Administrations of Iowa and New York City, and from various State offices of the Bureau of Agricultural Economics.

The plan for a sample census of agriculture originally advanced by Mr. J. B. Shepard contemplated the use of the Minor Civil Division as a sampling unit with certain restrictions and modifications.[1] The administrative advantages of the Minor Civil Division are undeniable. The Minor Civil Division is the smallest political unit for which U. S. Census data are tabulated. Since it is a definite geographical unit, its use as a sampling unit would facilitate the measurement of the movement of land into and out of agricultural production.

Studies completed early in 1937 however indicate that, with the great amount of variability in agricultural data, the Minor Civil Division was too large a sampling unit to serve as a basis for county estimates. It could be used for estimates by areas, such as crop reporting districts or type of farming areas, on a few major items which are well distributed among farms. Even then, a 20 per cent sample was a minimum.

The problem of determining the correct sampling procedure for a sample census of agriculture involves two fundamental considerations: first, the determination of the type of sampling unit which will, under a given set of conditions, give the greatest accuracy with the minimum of administrative difficulty and cost; and second, the determination of the size of sample necessary for a specified standard of accuracy. The expense of taking an annual sample census of agriculture would be difficult to justify unless such an enumeration-survey would furnish the basic data necessary for making estimates on major agricultural items by counties, or type-of-farming areas. Accordingly, a project was outlined in September, 1937, for investigating the statistical possibilities of sampling units smaller than

[1] Shepard, J. B., "Selection of Areas for Sample Agricultural Enumerations," JOURNAL OF FARM ECONOMICS, May, 1937.

the Minor Civil Division, with respect to the measurement of year-to-year change on a county basis.

There are two basic methods commonly employed in making annual estimates of agricultural phenomena such as crop acreages and production, and livestock numbers. The first is the use of an independent annual sample as a base for "building up" or "equalizing" to a one hundred per cent figure. The second is the use of successive annual samples for measuring year-to-year change from a given base such as a census year. The study of the Minor Civil Division as a sampling unit, previously referred to, was based primarily upon an analysis of United States Census data for the one year 1935. The Bureau of Agricultural Economics has generally employed the second method—sampling of year-to-year changes—in the preparation of state estimates of agricultural production and prices. This procedure has been based upon a recognition of the fact that the samples it now collects, primarily by mail, are too small and selective to be used in deriving estimates on an independent annual basis. It was decided, therefore, to shift the approach on this phase of the research on sample farm census methodology to an empirical study of year-to-year change.

Four types of sampling units were selected for study: the Random Individual Farm, the Judgment Route, the Random Single Section Block, and the Random Four Section Block. The individual farm or operating unit is the unit most commonly used in the enumeration of agricultural data. From a theoretical standpoint a sample of individual farms, selected at random and properly stratified, should give the most accurate results, provided that idle farms and other potential farm land are included in the universe. From the transportation cost angle the Random Individual Farm Sample would, on the average, be the most expensive to enumerate.

All of the five states selected for study were covered by the Public Land Survey. The original roads usually follow section lines; and the Minor Civil Divisions (political townships) are frequently, but not always, coincident with the standard survey townships of 36 sections of land each. The sampling units, intermediate in size between the Individual Farm and the Minor Civil Division, were, therefore, based upon the survey section of 640 acres. To approximate the 10 per cent and 20 per cent samples desired, units of 4 sections and 8 sections, respectively, were allotted for each survey township or its equivalent. Two sampling units (based on the section) were selected for study; the first a random selection of 4 separate single sections per township, that is, sections not necessarily contiguous; and second, a random selection of a square block of 4 sections. These are hereafter referred to as the Single Section

Block and Four Section Block Sampling Units. For the 20 per cent samples, eight single sections and two four section blocks were drawn for every 36 sections of land. Since the State Farm Census data used for this study were already compiled on an individual farm basis, it was impossible to hold the size of the section sampling units even approximately constant. For the purpose of this study, the Single Section and Four Section sampling units are defined as covering all land included in the farms for which the farmsteads are located within the specified area. In effect, the section lines constitute a grid which was used as a basis for selecting clusters or groups of farms. The extent to which this approach could be used in a modified form—say with natural land marks or boundaries in states where the land was not publicly surveyed or where the section lines are not a matter of common knowledge—will need additional investigation.

Because of greater convenience in enumeration and possible cheaper transportation costs, there is a natural inclination on the part of the practical crop estimator toward the so-called "route" method. The Judgment Route Sampling unit was defined to include a string of farms fronting on, and having the farm exit to, a given segment of road. The selection of this road segment was left entirely to the judgment of the State Agricultural Statistician who was assisted in some cases by an Economist from the State Agricultural College. Obviously the combination of the route unit with the element of purposive selection partially invalidates any comparisons that may be made with the other three units. To furnish valid comparisons, the study should also have included a Random Route Sampling Unit. In actual practice, the following principles were generally followed in setting up Judgment Routes:

(1) A starting point was indicated on an ownership plat map, preferably a point with an easily identified land mark.

(2) Two routes were designated on the map for each Minor Civil Division, one being labeled "A" and the other "B." The "A" route was used for the 10 per cent sample and the "A" and "B" routes combined for the 20 per cent sample.

(3) The designation of the routes was supposed to represent the statistician's best judgment, based on his knowledge of the agriculture within the county. Actually, the common procedure was to take a soil map of the county and lay out the routes so that they would cut across the various soil types as much as possible.

(4) In laying out the routes, preference was given to secondary roads rather than to State and National Highways.

In order to keep the size of sample reasonably comparable between the four types of sampling units, it was necessary to set up

quotas for the Judgment Route and Random Individual Farm samples. These quotas were arrived at by computing the average number of farms per section for each stratum (Minor Civil Division or combination of Minor Civil Divisions), and multiplying this average by the number of sections selected for the samples. For each of the four types of sampling units two 10 per cent samples were drawn; the second sample being exclusive of the first. The two 10 per cent samples were combined to give the 20 per cent sample.

Geographical stratification within the county was employed for all four sampling units. Since not all Minor Civil Divisions contain 36 sections of land an attempt was made, wherever possible, to combine odd size Minor Civil Divisions into county districts which would have approximately even multiples of 36 sections. The samples would then be drawn from the entire district as a whole, with the number of units in proportion, that is, for a 10 per cent sample, 4 sections for a 36 section district; 8 sections for a 72 section district, etc. The samples were, therefore, weighted approximately on the basis of total land area. The same procedure was followed in setting up the section units within the county district. Odd size or fractional sections were combined, in so far as possible, with other contiguous fractional sections to give equivalent section units of about 640 acres.

The County Universe

The shift in approach—from an analysis of annual data to a study of year-to-year change—necessitated the use of relatively complete annual enumeration data for successive years. The only farm data of this nature available for such a study were the figures compiled in the State Farm (Assessors') Censuses in a few of the leading agricultural states. Individual farm data from records of the Agricultural Adjustment Administration are purposely excepted. Sampling studies based on this material are now under way and will be covered by a separate report. Five States—Indiana, Wisconsin, Minnesota, Iowa, and Kansas—were selected; and an analysis was made, county by county, of the relative completeness and comparability of the state farm census data, both in comparison with the 1935 United States Census, and as between successive reports for the three years, 1935, 1936, and 1937. On the basis of this analysis 19 counties were chosen for individual study; four in in Indiana, two in Wisconsin, four in Minnesota, six in Iowa, and three in Kansas. As far as possible these counties were selected to represent divergent types of farming.

For the purpose of this study, it was necessary to establish a hypothetical "county universe" for each of the counties studied.

Changes in agricultural production, as reported in census enumerations, result from a combination of the following factors:

(1) A change in the item, such as crop acreage or numbers of livestock, on the same farm for the two years.

(2) A change in number of farms in operation.

(3) A change in number of farms enumerated, that is in completeness of enumeration.

In the Indiana, Minnesota, and Wisconsin counties where only the sample farms were identified, it was necessary to use the published county data as the "county universe" figures, after these had been checked for accuracy of computation. In these counties the sample data furnish no measure of change in completeness of enumeration. In the Iowa and Kansas counties where an approximately complete farm identification was secured, the county universe was the county master tabulation of all identified farms for the three years. The item totals on these master tabulations were checked with the published State Farm Census data and the discrepancies reconciled. The samples were then drawn from these master tabulations.

To allow for the fact that the Indiana, Wisconsin and Minnesota samples furnished no measure of change in completeness of enumeration, the crop acreage year-to-year changes were computed on the basis of ratio-relatives to all land in farms. This procedure was also followed for the acreage comparisons in the Iowa and Kansas counties, in order to preserve comparability between all counties. The livestock items were handled on a ratio-relative per farm basis for the Wisconsin and Minnesota counties, and on a direct change basis for the Iowa counties and consequently were summarized separately.

Farm Identification

The Random Individual Farm samples necessitated no identification of farms, as to location within the Minor Civil Division; hence, for the Indiana, Minnesota and Wisconsin counties, these were drawn in the state office, directly from the 1937 assessors' records. In Indiana, the 1937 assessors' schedule included items calling for the Section, Township, and Range number for each farm, and the farms for the Single Section Block and Four Section Block samples could also be drawn from the office records. The 1937 sample farms for these three sampling units were then matched back against the 1936 and 1935 assessors' books to locate "identicals" on the basis of name of operator and total farm acreage. This preliminary office work required careful checking in the field. In the first place, it is obvious that not all reports showing the

same operator's name and approximately, or even exactly, the same acreage were necessarily for the same farm. Furthermore, the inclusion of the land identification item in the 1937 Indiana assessors' schedule upset the comparability of the reports to some extent. There was a noticeable tendency on the part of some assessors to divide farming units into separate tracts on the basis of the section location of each tract. It was necessary, therefore, to combine these "split" farming units, for all samples, in order to make the 1937 entries comparable with those for the two earlier years. In addition, the samples as drawn in the office might not include all farms that were in operation in any one of the three years. Farms that were idle or that had been missed by the assessor in the 1937 enumeration would be omitted from the tabulation. For this reason, it was necessary to check with each assessor as to the completeness of the tabulation for the Single Section Block and Four Section Block sampling units. The Random Individual Farm Samples could not be checked for completeness, but only for unmatched farms. The terms "matched" or "identical" farms as used in this study mean the same operating unit, regardless of change of operator or change of farm acreage.

It was soon found that the above plan of farm identification had two serious limitations. Since only the farms included in the samples were being identified, there was no way of cross-checking the statement of the assessor as to whether or not a farm had actually been idle or had been omitted from the enumeration in any given year. The records could, of course, be examined, and this was done; but because of changes in size of farm and change in operator, this was never conclusive, particularly if there had also been a change of assessors during the three year period. The fact that these so-called "omitted" farms occurred more frequently in 1935 and in 1936 than in 1937 led the field workers to suspect a definite memory bias on the part of the assessor. Then, too, because of farm work it was difficult to interview assessors. Much time was being wasted in driving and in making contacts. And although the equivalent of eighty per cent of all farms in a county was being covered, the material collected was useful only for the single study already outlined.

When the field work was started in Iowa, Dr. T. W. Schultz, of Iowa State College suggested the idea of complete farm identification in each of the counties selected for study. This plan was adopted for the Iowa and Kansas counties, together with the following changes in procedure:

Individual farm identification cards were prepared in the State Statistician's office. These forms provided space for entering the

farm number and section, township, and range numbers; as well as name of operator, total acres in farm, and page and line numbers from the assessors' record books for each of the three years. All of the names in the assessors' books for all three years were then matched for identicals and a card was prepared for each farm appearing in the records two or more years. Separate cards or tabulations were prepared for farms appearing in the record for only one of the three years. Township maps showing the location of all houses were secured; and these "farmsteads" were numbered consecutively for each Minor Civil Division.

One or more men, as necessary, were selected for each Minor Civil Division, and these men were hired to come to a central office in each county and work with the field representative on the farm identification for his area. From one to two minor civil divisions could be completed per day under this plan, although this depended upon the number of farms and amount of turn-over in farm operators

Tabulation of Data

After the farm identification phase of the project had been completed it was necessary to transcribe the individual farm data from the original assessors' record books to prepared listing forms. For the Indiana, Minnesota and Wisconsin counties this involved the tabulation of only the sample farms, but for the Iowa and Kansas counties the transcription covered the master listing of all identified farms, as well as the separate tabulations for each of the samples. For the 19 counties, the study involved data for three years for approximately 39,000 farms.

Analysis of Data for 19 Counties

The term "error of estimate" as used in this study refers to the percentage deviation of the estimate on an item from the universe total for that item. These percentage deviations were computed by dividing the sample year-to-year change by the universe year-to-year change. This assumes that the universe figure for the base year is known. The error of estimate could be computed with the year-to-year change as a base—since change is the phenomena being sampled—but the other method was used to preserve comparability with the studies based on independent annual samples.

The errors of estimate for the individual crop acreage items in each county were weighted by current year universe crop acreages to derive a weighted mean error of estimate. These weighted mean errors for each county were in turn combined by weighting by comparable county universe crop acreage weights to derive a simi-

lar figure for the entire group of 19 counties. For the 10 per cent samples, the weighted mean errors range from 4.8 to 5.9 per cent; for the 20 per cent samples from 3.0 to 4.0 per cent; or a decrease of approximately one third in the error when the size of sample is doubled. The weighted mean errors on the livestock items showed considerable variation, both between sampling units and between size of sample. This may partially reflect the smaller number of counties considered, six, as against nineteen for the acreage items. For sheep the weighted mean errors of estimate ranged from about 10 to 20 per cent; for all of the other livestock items studied from about 1 per cent to 5 per cent.

Data on tractors were also summarized for the six Iowa counties. The weighted mean errors on this item were large, 4 to 10 per cent. Most of the Iowa counties studied had considerably less than 50 per cent of their farms reporting tractors, but all had a pronounced upward trend in numbers. The problem of sampling, then, was almost entirely one of measuring the number of new owners.

Replicated Sampling Study for Hancock County, Iowa

The original study was designed primarily as an empirical test of types of sampling units. For the counties in which complete farm identification was secured a detailed internal analysis of the universe data is now possible. As a concluding step in this study of sampling units smaller than the Minor Civil Division, fifteen 10 per cent samples were drawn and tabulated for each of 5 types of sampling units. This phase of the study was limited to Hancock County, located in northern Iowa.

Three of the five types of sampling units were identical with those already considered; the Random Individual Farm, the Random Single Section Block, and the Random Four Section Block. It was impossible for the writer to set up any replicated Judgment Route samples which would furnish a valid comparison with those used in the 19 county study. Accordingly it was decided to substitute a Random Route. The procedure followed in drawing the samples for this unit was as follows: A starting point was selected by drawing at random an individual farm number for each one of the 15 samples in each Minor Civil Division. The direction of the route was next selected by numbering eight points of the compass and drawing at random. Rules were set up regarding turns and other problems, and these were rigidly adhered to. When any element of choice entered into the problem the selection was made at random.

The fifth type of sampling unit studied was designated as the Purposive Single Section Block. Four sections were selected for

every 36 sections of land in a Minor Civil Division. With the aid of a county soils map the writer selected the various samples according to the following rules: (1) non-contiguous sections were to be chosen as far as possible, (2) the four sections were distributed among the major soil types, an attempt being made to keep this distribution roughly proportional to the total land area occupied by each soil type, (3) the repeated selection of the same combination of sections was avoided, regardless of rules (1) and (2).

Conclusions

Our conclusions, based on the above research in sampling procedure, are as follows:

(1) For the counties studied, which are fairly typical of the range of conditions in the Corn Belt States, and with geographic stratification of the samples within counties, the differences in accuracy between the four types of sampling units are not highly significant.

(2) A previous study of sampling procedure for Morrow County, Ohio,[2] showed that it would require 15 per cent more farms enumerated in pairs, and 94 per cent more farms canvassed in strings of 8 to make estimates equally accurate with those secured by taking individual farms. With stratification, these percentages were reduced to 11 and 64 per cent respectively. The fact that the present study showed no significant difference in results, as between the route and section block units, and the individual farm unit, may at first appear contradictory. Actually this is not the case. The Morrow County study was based upon an analysis of independent annual samples using 1935 United States Census data; the present study was concerned with sampling year-to-year change. The differences based on two methods of estimation simply indicate that year-to-year change is not as highly correlated between neighboring farms as are the absolute figures for a single year. This distinction is important as it affects estimating procedure.

(3) Since the route method of sampling possesses a number of administrative advantages, the results of the present study suggest the desirability of making a more detailed analysis of this unit, particularly for areas where conditions are less homogeneous than in the Corn Belt.

(4) Doubling the size of sample reduced the error of estimate by approximately one-third. This is in line with theoretical expectations. The same increase in sample size would add, on the average, only one acreage item per county to the number which could be sampled within the 2.5 and 5.0 per cent limits. The cost of securing

[2] "The Morrow County Project," Frederick F. Stephan, unpublished report.

accurate sample data by enumeration on minor items appears prohibitive. For the major agricultural items, a 10 per cent coverage probably approaches the most efficient sample size, accuracy and cost both considered. Allowance must be made, of course, for the fact that the total cost of a sample census would not vary proportionately with the coverage.

(5) In general, it appears that only items characteristic of 75 per cent or more of all farms can be sampled on a county basis with reasonable accuracy, using a 10 per cent sample. For the counties studied, the average number of acreage items per county within the 5.0 per cent error limit for this size of sample was 5.

(6) The results of this study suggest very strongly the desirability of further analysis on sampling year-to-year change for a larger universe, such as a group of counties or a type-of-farming area.

(7) Any sampling procedure selected for a Sample Census of Agriculture should take into account the necessity for a measure of the in-and-out movement of farm land. Indications on this highly important factor are sorely needed, if only on a state basis. The possibilities of a combination of two types of sampling units, the Minor Civil Division and a smaller unit, should not be overlooked.

(8) It is generally assumed that the regular United States Census would furnish the base year data, and that a sample census would provide a basis for estimates in inter-censal years. If this procedure is followed it is imperative that some system of farm identification be used in the census base year, and that the coverage include idle as well as operated farms, potential farm land as well as land in agricultural production at the time of the enumeration. Otherwise, there is no adequate basis for drawing a representative sample (or samples) for use in inter-censal years.

THE COMPLEMENTARY AND COMPETITIVE CHARACTER OF AGRICULTURE IN LATIN AMERICA AND THE UNITED STATES

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I shall start with a basic assumption that our trade with Latin America in the future is likely to be considerably more important, both absolutely and relative to our total foreign trade, than it has been previously. This assumption is based largely on two self-evident facts: (1) that it is the firmly established policy of the U. S. Government to promote trade and cultural relations between the United States and Latin America and, (2) that the rapid development of closed economies in Europe and Asia is making the maintenance of trade with those parts of the world increasingly difficult.

The total trade of the Latin American countries has in the past accounted for approximately one-fifth of our total foreign commerce—a somewhat larger proportion than this of our imports but somewhat less than one-fifth of our exports.

But it is with the agricultural segments of the trade that this paper is primarily concerned. When we look at these segments we find that in the recent past Latin American countries have constituted markets for less than 8 per cent of our total agricultural exports. On the other hand, Latin American countries accounted for 30 to 40 per cent of our total agricultural imports. Agricultural exports to Latin America show some increase since 1935 but are not quite up to the 1929 level. Latin American countries took 7.6 per cent of our total agricultural exports in 1929, only 4.8 per cent in 1935, and 6.6 per cent in 1937. On the other hand, there has been no appreciable change in the importance of Latin America as a source of agricultural imports—accounting for about one-third of the total in each period.

The situation is quite different in respect to our nonagricultural trade. A little over 20 per cent of our nonagricultural exports go to Latin America, while only about 10 per cent of our nonagricultural imports and practically none of our strictly industrial imports come from Latin American countries. Minerals comprise the bulk of these nonagricultural imports.

What do these figures mean? That Latin America has been much more important as a source of agricultural imports than as a market for agricultural exports and that it is an important market for our industrial exports but supplies virtually none of our industrial im-

ports and only a small proportion (about 10 per cent) of our total nonagricultural imports.

What of the future? What changes, if any, can we expect in the character and importance of this trade?

Seven countries take more than three-fourths of our agricultural exports to Latin America. They are Cuba, Mexico, Panama, Venezuela, Argentina, Colombia, and Brazil, with Cuba being the most important. Almost 25 per cent of our exports to Cuba consist of agricultural products. These products were, in the order of their importance in 1937, wheat flour, lard, rice, and certain vegetables, particularly potatoes. Neither cotton nor tobacco, our two leading agricultural export items, are included in the list of our agricultural exports to Cuba. What are the reasons for this unusual importance of Cuba in comparison with other Latin American countries as a market for American agricultural products? The Cuban economy has developed to a very large extent on the basis of sugar production; and the U. S. has been in a position to absorb a large part of this product. Aside from sugar the only Cuban products of significance from an export point of view are tobacco and certain fruits and vegetables. Consequently, with so much of the agricultural and human resources of the country going into the production of sugar, it has been necessary for that country to import a substantial part of its requirements for foodstuffs. The United States has obtained a large share of this business, partly because of its proximity to Cuba and partly because of the preferential trade relations between the two countries. This preferred trade relationship means that a part of our market in Cuba has been obtained at the expense of other suppliers.

It may be pointed out, in general, that the products exported to the other Latin American countries are the same as those shipped to Cuba. Wheat flour and lard are the leading agricultural export items in our trade with almost every one of the tropical countries of Latin America. To the sub-tropical and temperate zone countries, such as Brazil and Argentina, our principal agricultural exports are specialty products, such as fresh fruit and canned goods the former entering chiefly on the basis of reverse seasons in these countries as compared with the United States.

We will now examine the position of Latin American countries as a source of U. S. agricultural imports. A little more than one-third of our agricultural imports come from Latin American countries. Of these somewhat more than one-half fall into the category of competitive perhaps a better term would be "supplementary" products. In 1936 the imports classified as competitive made up 54 per cent, against 46 per cent for the non-competitive, or com-

plementary. Interestingly enough, these are precisely the percentages that appeared in the prewar fiscal year 1913–14.

More than two-thirds of the imports of non-competitive agricultural products from Latin America consist of coffee, followed by bananas, making up about 15 per cent; cocoa, which makes up about 7.5 per cent. These three products together comprise more than 90 per cent of our non-competitive agricultural imports from Latin America.

By far the most important of the competitive imports is, of course, sugar, which comes mainly from Cuba and which makes up about 45 per cent of our total competitive agricultural imports from these countries. The next most important item is vegetable oil seeds, the outstanding example being flaxseed, from Argentina. Cattle hides are next; this is followed by wool from Argentina and Uruguay, unmanufactured tobacco from Cuba, and meat and meat products, which enter mainly in the form of canned beef from Argentina, Uruguay and Brazil.

The two main sources of competitive agricultural imports in Latin America are Cuba and Argentina. In the case of Cuba, however, it should be recognized that sugar, of which our production is far short of requirements, is the dominant import and that the entry of Cuban sugar into the United States is controlled by quota.

In other words, Argentina is about the only Latin American country which may be considered an important source of imports which enter into competition with the products of Continental United States. By far the greater part of the imports from the rest of Latin America, excluding again sugar from Cuba, consists of non-competitive products.

The facts thus far presented indicate that the agricultural trade between the United States and Latin America is predominantly of a complementary character. The complementary nature of the trade is all the more apparent when it is remembered that the imports of certain products which have been classed as competitive, such as the important item of cattle hides, are in fact supplementary. We do not raise cattle for their hides. And imports, such as corn, resulting from crop failure in the United States, must also be classed as supplementary.

There is, however, another aspect bearing on inter-American trade which relates (1) to the dependence of the entire Pan-American region on outside markets for agricultural surpluses and (2) to its dependence upon imports of agricultural staples from outside sources. In cotton, the United States, Brazil, Peru, Mexico and Argentina in the order thus given are the major cotton growing countries of the Western Hemisphere. The combined annual output

of these countries has been approximately 15 million bales. This quantity exceeds the domestic requirements of the United States and Latin America by at least six to seven million bales per year.

In wheat, the United States and Argentina produce more than one billion bushels per year (1,250,000,000 bushels in 1938), of which something less than 800 million bushels are required for domestic consumption. The minimum quantity available for export from the United States and Argentina is around 200 million bushels. And in some years, as in 1938, almost 500 million bushels are available for export. Other Latin American countries ordinarily require not more than 50 million bushels a year. In cotton and wheat, Latin America and the United States are at the present time much more than self-sufficient. And when, in the case of wheat, the Canadian production is added to the total, it is clear that the problem of the Western Hemisphere is one of oversupply.

In spite of the fact that rubber is indigenous to South America and that Brazil was, in prewar years, the principal source of supply, the production in Latin American countries is far below the requirements of the United States. The net imports of rubber into the Pan American group as a whole average almost 500,000 tons per year. There is little doubt that rubber offers the best possibility for increased trade between the United States and Latin America of any agricultural staple.

It remains now to indicate certain conclusions that may be drawn from the facts heretofore presented. They are as follows:

(1) In view of the nature of our trade with Latin America in the past and in view of the relative production resources of that region and the United States, the principal result of an expansion in our trade with that part of the world must be a substantial increase in our exports of industrial products to Latin America and an increase in imports of agricultural products from Latin America.

(2) As regards these increased agricultural imports the expansion must be, except in the case of Argentina, largely in non-competitive products, mainly in tropical products, which are not produced within the boundaries of Continental United States.

(3) So far as imports of competitive products are concerned, much will depend on the nature of our import restrictions. These restrictions at the present take the form of exceptionally high import duties. It is logical to suppose that if these extremely high duties were reduced there would be some expansion in imports from Latin American countries. On the other hand, so far as products such as grains are concerned, it is not likely that there would be imports of significance in relation to our production even if our import duties were entirely removed, except in years when our domestic supplies are unusually short. In general, it is not believed likely, even with a more liberal import policy, that there would be a sufficient increase

in imports of competitive agricultural products from Latin America to have a significant bearing on particular commodity situations in the United States, except, possibly, in the one case of flaxseed.

(4) So far as agricultural exports are concerned, there is some prospect, as is illustrated by the case of Cuba, for an expansion in exports of certain foodstuffs to Latin American countries, namely, to those countries in the tropics. The products that would be most likely to be favored in this expansion are pork products, particularly lard, wheat flour and canned goods of all kinds, fruits, vegetables, milk, etc.

(5) There is no reason to expect an intensification of our trade relations with Latin America to result in an appreciable alleviation of our surplus problems with respect to those commodities which are already produced in excess of the total present, and probable future, requirements of Latin America and the United States.

My general conclusion, therefore, is this. So far as American agriculture is concerned, a substantial general increase in our trade with Latin American countries would probably bring about some increase in competition of Latin American products in the American market. But such slight disadvantage as this might be to American agriculture as a whole, assuming that reasonable care were taken with respect to a reduction in protection for domestic producers, would without doubt be offset by improved economic conditions and higher purchasing power in the United States for American agricultural products, resulting from an expansion in exports of industrial products to Latin America. Such gain, however, would necessarily accrue primarily to the producers who now rely almost exclusively on the domestic market, namely the producers of dairy products, cattle, poultry and eggs, and many fruits and vegetables.

So far as the producers of our great export staples are concerned, it could not be expected that increased trade with Latin America could bring any considerable direct gain. The reason for this is that, in the first place, Latin American countries do not now and probably will not constitute markets for such products as cotton and tobacco and that, second, with respect to cotton and wheat, and some other agricultural staples, Latin America and the United States produce far more than the requirements of this part of the world.

So far as these latter products—cotton, wheat, tobacco and, to a lesser extent, fruit—are concerned, the problem of the Americas is one of disposing of supplies in excess of American requirements. It may not be out of place to suggest that the solution of this problem, a most serious one in view of present shrunken world markets, will call for cooperative production and marketing policies in the Western Hemisphere.

BRITISH EMPIRE TRADE AGREEMENTS IN RELATION TO TRADE IN FARM PRODUCTS BETWEEN CANADA AND THE UNITED STATES

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The fiscal policy of Canada is closely related to the fiscal policies of Britain and the United States. From 1846 to 1932, the policy of free trade of Britain and the protective policy of the United States together kept Canada in difficulty in regard to trade. The unrestricted imports of food products of Britain necessitated competition of Canadian exports with countries of more favorable climate while the protective policy of the United States made it difficult to enter the nearest market.

The Ottawa Trade Agreements were made necessary by the tariff legislation of the United States of 1930 and were possibly a necessary prelude to the new trade agreements which go into effect in 1939.

I

The claim that the fiscal policy of Canada is directly the result of the fiscal policies of Britain and the United States requires brief historical examination. Prior to the repeal of the Corn Laws in 1846 a preference was allowed the colonies in the British market. Under that preference Upper Canada, now the province of Ontario, was able to import wheat from the United States and grind it into flour for the British market. After the repeal of the Corn Laws in 1846 strenuous efforts were made by Canada to trade with the United States. These efforts became successful in 1854 and by the treaty of that year reciprocity in natural products was secured for a ten-year period. This treaty was abrogated by the United States in 1866, lasting only one year longer than was originally provided for.

In 1867, the Dominion was formed. The form of government then established followed closely that of the United States. One important difference was the formation of provinces with delegated powers instead of the formation of states with powers delegated to the federal government. The residual powers remained with the federal authority in Canada.

Trade and commerce became a federal affair whereas previously the different divisions of the country made their own arrangements in regard to trade. After the formation of the Dominion a national policy was initiated the aim of which was to develop a home market for raw products. Although every federal election from 1878 to 1930 gave considerable attention to trade policies and tariffs the

national policy enunciated in 1878 was not discontinued. Canada has had one party devoted to a tariff for protection and opposing it a party devoted to a tariff for revenue.

Considerable unanimity of opinion developed even between the two opposing parties as to the need for transportation from east to west which the national policy promoted. Hence in 1911 after Canada had three transcontinental railways almost completed it was not surprising that the offer of reciprocity with the United States was declined. East and west transportation had been made necessary when trade north and south had been interrupted. When this transportation was provided the offer of reciprocity was rejected.

In the meantime any chance of securing an entry into the market of the United States was appreciated. In the decade from 1880 to 1890 a flourishing trade in barley export developed in the province of Ontario. From 1882 to 1891 the average acreage of barley in that province was over 700,000 acres. In 1891 the McKinley Tariff imposed a duty of 30 cents per bushel on barley. In the decade from 1892 to 1901 the average acreage of barley in Ontario was less than five hundred thousand acres. The tariff policy of the United States had in this period a great influence on the type of farming in Ontario as, prevented from growing barley for sale, a shift was made to cheese and bacon production the surplus of which of necessity sought markets overseas.

By no means all chance of trading north and south has been the result of arbitrary restrictions. During the period of the Reciprocity Treaty from 1854 to 1866 just the proportion of the trade in that direction attributable to the treaty and the proportion due to the Civil War would be hard to determine. Similarly during the World War there was considerable trade north and south not entirely the reflection of trade agreements. Finally since 1935 the fluctuations in the volume of trade reveal how even in peace time the influence of trade regulations may easily be over-rated.

In general, it may be said that Canada has stood by ready and anxious to trade with the United States when that market was available and when that market was not attractive the overseas market was sought as an alternative.

Britain from 1846 to 1932 retained a policy of free food imports as far as tariff was concerned. There were during this time, however, ways of securing some measure of protection without imposing a tariff. Unwanted potatoes could be kept out on the score of disease. Cattle could be excluded on the same plea except for immediate slaughter. Britain can not claim to have practised free trade in the strict sense of the term at any time as even before the

repeal of the Corn Laws labor regulations had been imposed. And in case anyone should question what labor regulations have to do with trade it may be well to state here the definition of free trade we have in mind.

"The removal of all artificial restrictions on, or encouragements to, any particular industry; the levying of duties for the purpose of obtaining revenue and from no other motive; the levying of equivalent excise duties where customs are requisite; in short the abandonment of the efforts, once universal, to divert industry into some channel into which the action of the normal economic forces would not have directed it."[1]

According to this definition the sheltering of some occupations while others are left to the full force of competition is an interference with trade, just as surely as it is an interference with laissez-faire. And in this connection the question arises how may we expect any great degree of freedom of exchange of goods internationally while such small amount of encouragement is given to the migration of labor? Tempting as an examination of this point is it may well be left to those who discuss this paper.

Perhaps the best example of the fluctuations in the direction of the trade of Canada may be gathered from the record of the trade in live cattle. It may be noted that in both directions this trade varies from very few to almost the total for the exporting country. It may be noted also that the total varies tremendously.

During these somewhat abnormal times total shipments of live cattle from Canada varied from 454 thousand in round numbers in 1919 to less than 26 thousand in 1932 and totalled less than 60 thousand for the first seven months of the present year. Sometimes the United States took the entire exports. Prior to the last United States Agreement and including the two years before the British Empire Trade Agreements the greater number were exported to Britain.

The fluctuations in total number exported and particularly the low number exported during the current season indicate that demand has a marked influence on the volume apart from trade agreements. Allowance for this still leaves the impression from the results, that, the British Empire Trade Agreements were the result of the Hawley-Smoot tariff just as the Confederation of the provinces was hastened by the abrogation of the Reciprocity Treaty in 1866, and the necessity of developing transportation routes east and west.

Canada for sixty years has tried to trade in a north and south direction. That is the reason that the balance of payments between

[1] Bastable, C. F., *The Theory of International Trade*, London, England. Macmillan 1903, p. 129.

these two countries has been against Canada, as nations do not borrow money; they simply buy goods on time. In past years considerable of the exportable surplus of Canada was sent to Britain while most of Canada's purchases were made in the United States, leaving Britain and the United States to square accounts as they wished.

II

It is not difficult today to exchange goods for goods between different nations. It is harder to pay old debts with goods. It would probably not be difficult to export goods on an I.O.U. basis. The problem is to find the country which will accept the promises.

The great problem with the Empire Trade Agreements as far as Canada was concerned was that previous dealings had been largely outside of Empire countries, borrowings had been made elsewhere and hence when three or four cornered trade declined Empire Trade Agreements could do little to square past commitments.

It is frequently claimed that trade follows the flag. This may be generally so. There are, however, exceptions. Canada appears to present one. While there is considerable Empire capital invested in Canada there is less proportionally than is invested in Argentina. Hence it is hard to secure favors from Britain in the matter of trade arrangements at the expense of Argentina. And this on account of the fact that trade follows investments rather than the flag.

Had Britain invested more heavily in Canada instead of in Argentina, then Empire preferences might logically have gone further than was actually the case. Nevertheless they did do something for Canada in a difficult period—a period embracing a time when surplus products were being sold in Britain for cheap pounds sterling and the proceeds used in squaring past commitments in the United States with dear dollars. That period soon passed and the Empire Trade Agreements fell into disrepute when concessions were made by the United States in 1935. Few would have expected that the advantages received in the live cattle trade for instance, which flourished in 1937 would have again proved so temporary as in 1938 the advantage of the Empire agreements again proved substantial.

There does not seem much prospect of Canada paying past commitments in the United States with export of farm products. There are other ways of comparatively recent development. Canada has three important exports to the United States which are expanding rapidly though somewhat irregularly. These are gold, newsprint and other forest products and the net balance from tourist traffic.

III

Climatic limitations and sparseness of population particularly in some parts of the country combine to make Canada a country of specialized farmers. Three-quarters of a million farms stretching in a narrow fringe from the Atlantic to the Pacific under varying conditions except having one thing in common, the shortness of the growing season, have not only to export a surplus for ordinary farm needs but also for much of the food common to more moderate climates and which they have become accustomed to. This is perhaps the reason why a country of not quite twelve million people should regularly find themselves in fourth, fifth or sixth place in international trade. Position and natural resources combine to prevent Canada from being self-sufficient. Few countries are more thoroughly committed to international trade. Hence it is gratifying to find that, much as has been written and spoken of the "paralysis" and "strangling" of international trade, in the year 1937 the quantum of trade between nations was 97 per cent of that of 1929. Unfortunately trade in some farm products has not stood up as well as the total, and this hits Canada in a very vulnerable spot as one of Canada's special products, wheat, has suffered the greatest decline in volume. Greater dependence has recently been placed on forest and mineral products. Indications are that this will also be necessary in the future.

IV

This is a record of developments. Why these developments have taken place has been left largely to those who may discuss the points raised. From the Canadian point of view there is one answer to the question why. It is expediency. Quota regulation of international trade is a new idea to Canadians who have been told for half a century that an unlimited market for farm products was always available in Britain and also that it would only be a question of time until the United States would be dependent on imported food. This idea is now almost completely if not entirely abandoned and it is pretty generally conceded now that exports of farm products have limitations. Census figures of 1936 for the wheat growing area show for the first time a reduction in area devoted to wheat as compared with the previous census figures. Should, however, events develop that would require more wheat in international trade than has been customary the past few years, there is no doubt that Canadian farmers would be found in a "Barkis is willing" attitude.

V

There is one way by which a vast amount of trade is carried on which does not get into the statistics of trade in goods. And this in

spite of the most rigorous trade restrictions. That is the ever-increasing tourist traffic. All nations whether committed to the idea of self-sufficiency or not appear to be unanimous in encouraging the tourist traffic. Everyone appears welcome almost anywhere provided they have with them a return ticket. Tourists stock up with what satisfies them best, prices considered, in their world tours. All of these items are not included in trade statistics. People do their touring largely in countries where the same language is spoken and the same culture prevalent. For this reason it would appear that whatever trade restrictions may prevail between them there will always be considerable volume of trade between Canada and the United States.

VI

The advantages of international trade are largely the same as are the advantages of trade in general. What prompts self-sufficiency in an individual or a nation is the idea that some other individual or nation is getting the best of them. The greatest handicap of trade international or individual, is prices out of line with one another. The greatest incentive to trade of any kind is prices within exchanging range of one another.

Again it is easier to trade present goods for present goods than present goods for past services or old debts. This is on account of the suspicion frequently well founded that some change has taken place in the value of the currency. Hence if increased volume of trade is desired, and it certainly is by Canada, then it would appear that there are three things essential—

1. Rewards of various specialists should be made somewhere near comparable so that specialization may not only continue but expand.

2. The value of the currency should be kept sufficiently stable to promote the exchange of present goods for past or future goods or in other words to facilitate payment of debts and allowance of credit.

3. International credit should be extended or received from countries willing to accept goods in return.

These essentials may be often preached and seldom practised. Yet no small amount of the lack of expansion in trade is no doubt due to this lack of practice.

The Empire Trade Agreements marked the end of Britain's policy of free import of food. During the time that policy prevailed some foreign countries had established a favorable balance of trade with Britain by the export of farm products. The Empire Agreements increased trade within the Empire at the expense of foreign countries and thus paved the way for the new trade treaties recently negotiated.

It is generally considered that the Ottawa Trade Agreements made it difficult to arrange the treaties recently negotiated. That is understandable. What may not be quite so clear but equally true is that these agreements may have been a necessary prelude to present arrangements and helped them along in at least three ways—

1. By demonstrating the need for freer trade.
2. By providing Canada with needed bargaining power.
3. By restricting British food imports by quota legislation.

A DISCUSSION BY ASHER HOBSON

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I reap little enjoyment in discussing papers with which I agree. One who discusses three papers is entitled to some enjoyment. Consequently, I propose to devote considerable attention to some of the things which those who prepared the three preceding papers did not say, rather than to the things which they said.

It is clear from the data presented by Mr. Wheeler that Latin American countries cannot be looked upon as potential outlets for surplus stocks of our agricultural staples. To me it is equally clear that the greater portion of such benefits as may accrue to agriculture through increased trade with those countries must reach the American farmer through reflection of increased industrial activities and fuller employment upon domestic consumer purchasing power.

While I do not wholly reject Mr. Wheeler's basic assumption, "that our trade with Latin America in the future is likely to be considerably more important, both absolutely and relatively to our total foreign trade, than it has been in the past," I must confess considerably more optimism than is implied in that statement, in the possibility of benefits to agriculture through trade expansion with other countries.

A good neighbor policy is not in itself a sufficient guarantee. Something to sell to somebody that wants it, at a price he is willing to pay is an all important set of circumstances which may not be present in increasing measure with respect to the United States and Latin American countries.

Something less than eight per cent of our total agricultural exports go to Latin American countries, while in 1937, the United Kingdom took one-third of the total. The value of our total exports to the United Kingdom in 1937 was $200,000,000 more than our sales to all South America during the same period. To me it seems quite probable that the recently completed trade negotiations with England are likely to prove more significant in the form of volume of trade than our efforts in the direction of Latin America.

To be sure, a number of countries of Europe practice closed economies, yet one can scarcely ignore the fact that the industrial nations of western Europe have been our important agricultural customers. Trade agreements with England and France furnish evidence that the doors are not entirely closed in that direction. And in speaking of closed economies, one can hardly overlook the presence of clearing agreement in South America.

Contradictory as it may seem, I accept the conclusions drawn by Mr. Wheeler in his paper, but question what he labels a "basic assumption." May I hazard the suggestion that his conclusions are quite able to stand on their own, without support from the basic assumption?

In regard to Professor Lattimer's paper, I suspect that many of you were quite as surprised as was I, to learn the extent to which the vibrations of our actions in this country shake the Canadian ship of state, and even markedly shape policies of Empire.

Let us note some of the results of these vibrations as listed by Professor Lattimer.

1. The abrogation by us in 1866 of the Reciprocity Treaty—they called them treaties in those days—with Canada played an important role in hastening the confederation of the Canadian provinces.

2. Lack of trade north and south (between the United States and Canada) promoted the development in Canada as a matter of national policy, of transportation routes east and west.

3. The completion of these routes caused Canada to reject the offer of reciprocity in 1911. (I had always supposed that the indiscreet remarks of certain members of Congress had something to do with the rejection.)

4. The British Empire Trade Agreements were the direct results of the Hawley-Smoot Tariff of 1930.

While I would like to think of the United States as a potent force in world affairs, I am inclined to believe that Professor Lattimer has been overly generous in the granting of credit to his neighbor on the south.

I wish Professor Lattimer might have seen fit to develop more fully his interpretation of the role played by Empire Trade Agreement considerations in the formulation of the terms of the recent agreements between the United States and Canada and the United States and the United Kingdom. May I illustrate what I have in mind?

In the trade agreements with Canada (1935 and 1939) the United States granted concessions to Canada on a number of competing agricultural products. In the agreement with the United Kingdom, the United States grants no concessions on agricultural imports, but receives a number of concessions from the United Kingdom on agricultural products exported from the United States. It is reasonable to suppose that a reduction of the tariff on Cheddar cheese from seven to four cents per pound, for example, was one of the prices paid by the American farmers to Canadian farmers for the privilege of sharing the English market on an equal footing in the sale of wheat and lard.

The terms of the Canadian agreement standing along might have vastly different significance than they have when considered in conjunction with the agreement with the United Kingdom. As I say, I am sorry that Professor Lattimer did not devote more attention to the recent agreements and their significance in relation to Empire trade policy.

SERVICING FEDERAL LAND BANK LOANS THROUGH NATIONAL FARM LOAN ASSOCIATIONS

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The experience of twenty-one years lies behind us in the field of cooperative farm mortgage credit. A study of this type of credit, as administered by the Federal land banks of the country under the varying economic conditions of the past, should enable us to fairly evaluate the accomplishments of the system.

The Act under which this system was created has been amended from time to time as experience has disclosed weakness or omissions. Constant effort has been put forth to make the system genuinely responsive to the credit needs of agriculture by providing through the Federal land banks a dependable and usable source of capital credit in periods of prosperity and economic adversity.

The purpose of this discussion is not to analyze the rather complex structure of the Federal Land Bank System but rather to consider just one of the functions of an essential part of that system—the servicing of loans by the national farm loan association. This local association has other important functions as well, thereby making it impractical to attempt to consider the servicing of loans by an association in terms of a detached operation. Rather, it seems logical to consider this one important function in connection with all the operations of the national farm loan association as an essential, integral part of the land bank system.

The Federal Farm Loan System was not created as a measure of "farm relief," as we now use that term. Farmers were facing no great crisis nor were they oppressed by an exceptionally cumbersome burden of debt. On the contrary, farmers were enjoying a period of rising prices and prosperity. The agricultural credit movement in its inception was simply one of the steps by which agriculture moved from the position of a self-contained domestic economy which needed little capital to a commercialized exchange economy requiring large amounts of credit. The need for a satisfactory type of farm mortgage credit was a natural and normal result of changing conditions in land tenure and of the modern conception of the use of capital as applied to agriculture.

The Federal Farm Loan System was a new departure in American finance. There was no background of American experience upon which to build. Principles, policies and procedure all were to be defined and developed.

National farm loan associations have no exact counterpart either in European or American financial institutions. It is safe to assume

that the framers of the Act felt that neither the officers nor the directors of the twelve Federal land banks could be expected to be intimately acquainted with the farmer applying for a loan nor with the farm offered as security for that loan. They visualized a credit system which would be under the control of the farmer-borrowers with means for deciding who, among their neighbors, could be safely intrusted with credit and to what extent. It is apparent that the framers of the Act likewise felt that a local cooperative organization would be in a better position to service the loans than would a land bank operating on a remote control basis at a point several hundred miles from the farm security. The business affairs of the association were to be managed by a board of directors elected by shareholders at a regular annual meeting. The board of directors was authorized to name a loan committee and to employ a secretary-treasurer. The chief function of association directors, as defined in the original Act, was to pass upon loan applications and act upon loan committee recommendations.

It was assumed that the local national farm loan association board would be interested in the applicant; in his capacity to use credit; in his reputation for honesty, industry and debt repayment.

The Act defines the duties of the secretary-treasurer of the local association and specifically calls attention to the fact that he is expected to "collect, receipt for, and transmit to the Federal land bank payments of interest, amortization installments, or principal arising out of loans made through the association."

To fully understand the program for the rehabilitation of national farm loan associations, we must appreciate the part the local associations played in the operation of the system during its early years. From 1917 until 1930 prompt repayments by all borrowers was the general rule . . . a delinquency was a rare exception. Not being faced with any serious collection problems, the land banks as a rule failed to utilize the services of the local association. The associations were maintained more or less on a "show window" basis. The income available to the association during that period of time was chiefly in the form of dividends from the Federal land banks, the entire amount of which was usually passed on to the association shareholders. For want of responsibility, the local organizations became increasingly dormant. In many cases, due to lack of operating income, associations were unable to interest competent men in serving either as directors or as secretary-treasurers. Many associations became a "one man show" with the secretary-treasurer as the dominating and controlling figure.

The tendency of the banks toward centralization was at that time perhaps inevitable, because of the necessity of operating on a

very narrow margin of income. It was also due, in part, to the fact that some of the men in charge of the farm loan system were not sufficiently cooperative-minded. It seemed easier to attach auxiliary motors here and there to accomplish a given job than to do the things necessary to make the land mortgage credit mechanism operate as it was designed to operate. Little thought was given at that time to the future need of an organization trained and ready to step into the breach when the days of easy collections would be over.

By the middle of 1930 the depression began to have a telling effect on collections. The banks in general tried to meet this situation by developing a corps of fieldmen operating out of the land banks virtually on a door-to-door collection basis. With the depression came the suspension of dividends to the national farm loan associations thus cutting them off from their chief income. To further complicate the situation, just at the time when collections were at the lowest ebb the Federal land banks were called upon to undertake the largest program of farm loan refinancing within American experience.

From this point on, however, my discussion necessarily must be based upon the experience of The Federal Land Bank of Louisville in relation to the 471 national farm loan associations in the states of Ohio, Indiana, Kentucky and Tennessee. As the emergency activity of making new loans approached a return to normal in the early part of 1935, the Louisville Bank had on its books one hundred and twenty thousand loans scattered throughout the three hundred and fifty counties in the District. The need for developing a sound and effective collection and loan servicing program was obvious. We found ourselves at the crossroads deciding as to which type of service program should be developed. We had the choice either of building strong and efficient local association units capable of handling the servicing job; or of building up a highly centralized collection agency operating on a mail order basis supplemented by a force of field collectors. It was clear that the limited operating spread of one per cent available to the banks would not permit us to follow both of these roads, or to compromise between the two modes of operation. We chose, and I believe wisely, to build up the local association units in the field.

The rebuilding problems which faced the Federal land bank were both numerous and complex. During the early years a number of associations had been chartered in counties where the services of one unit would have sufficed. There had been a wide overlapping of services with many associations making loans in five or six counties in addition to their home counties. We had an association membership that generally was apathetic and uninformed.

The objectives of the rehabilitation program undertaken by The Federal Land Bank of Louisville in 1935 may be briefly stated as follows:

1. Consolidate scattered management so that farm loan activities in each county would be centralized in one county seat office.
2. Seek the cooperation of local boards of directors in securing competent secretary-treasurers, and in actively supervising the affairs of the association.
3. Awaken the interest of member-borrowers.
4. Provide adequate allowances to the national farm loan associations so that they might secure competent management and build adequate financial reserves.
5. Decentralize the Bank's operations, thereby effecting savings through the withdrawal of the field force and by reducing to a minimum direct correspondence between the Bank and the borrower.

To put this rehabilitation program into effect the Bank entered into an agreement with each association, whereby the board of directors of the national farm loan association agrees to perform in a satisfactory manner all of the duties incident to the servicing of the loans made through their association and to keep in office at all times a secretary-treasurer who is competent and capable. In return the Bank agrees to make available to the association a monthly allowance based on the number of loans serviced by the association. Out of this allowance the association pays its secretary-treasurer, maintains its office set-up and usually is able to put aside a small amount for its reserve account.

The duties of the secretary-treasurer as outlined in this resolution may be summarized as follows: Making and handling collections on both current and delinquent loans; procuring and submitting to the Bank relevant information on delinquent or distressed cases; handling the management of Bank-owned farms; arranging wherever possible for transfer of distressed loans from weak to strong hands; looking after partial releases; fire and windstorm losses and in general cooperating to the fullest extent with the Land Bank and the Land Bank Commissioner in all matters of common interest.

The adoption of this plan also carries with it a voluntary agreement by the association to confine its future activities in making new loans to its home county. In years to come our present problem of overlapping territory will thus be eliminated.

The exercise of self-government by national farm loan associations, as such, is not impaired by this arrangement. Stockholders elect directors in open meetings, and directors hire secretary-treasurers. No outside agency can change this situation. The Bank

can not and does not have any part in directly hiring any secretary-treasurer; but in order for the association to receive the allowances, the secretary-treasurer must do a satisfactory job. Payment of the servicing allowance may be suspended or discontinued when the work of a secretary-treasurer fails to measure up to a reasonable standard of effectiveness.

Since the secretary-treasurer is the chief executive officer of the association, the plan succeeds or fails according to his ability and industry. Good directors may be depended upon to hire a good secretary-treasurer after they themselves become fully informed as to the requirements of this position. We have found that when association stockholders are informed, interested and active, they will elect good directors.

At the present time all payments in connection with Land Bank and Commissioner loans are made by the farmer through his association office. This applies to current as well as delinquent items. In mailing the statement of account to the borrower the Bank encloses a return envelope addressed to the association which services the loan. Although there was some confusion at the time the change in method of repayment was made, we find that the mechanism of the repayment plan through associations in the Fourth District is now running smoothly and with reasonable efficiency. Secretary-treasurers, of course, are covered by an indemnity bond, which protects both the borrower and the Bank in transactions with the association.

One result of repayments through local national farm loan associations is that an increasing number of Federal land bank borrowers visit the national farm loan association offices to pay installment maturities. Secretary-treasurers now report relatively few payments received by mail, except from borrowers who no longer live in the county. More and more association members are paying directly over the counter. Members who never had been in the association office since their loans were closed now visit it several times during the year. This is highly desirable from the standpoint of member education and member interest. Through personal contacts the secretary-treasurer has a better knowledge of what is going on in the minds and upon the farms of his members.

We believe that a key factor in the servicing of farm mortgage loans is the ability to anticipate the breakdown of a loan, and to sense the conditions and the type of management leading to eventual breakdown. Prevention may remove the need for later cure in credit administration as well as in health conservation. Under a direct mail collection system, the mortgagee generally does not have access to first hand information as to whether the mortgaged

farm is depreciating through improper farming methods, nor is it known whether the future value of the farm is being sacrificed to meet present payments. There is no check-up to determine whether or not the land is being so managed as to produce the required revenue, while at the same time conserving or increasing its productivity and permanent value. Poor farming practices may ruin the security long before a thirty-three year farm loan is half repaid, yet until repayments cease the bank holding the mortgage might know nothing about it under the direct mail type of operation referred to.

The need of farmers for reliable and sympathetic advice on the subject of credit and its use long has been emphasized by educators. Few men in any community are better able to give sound and helpful counsel on credit than the farm-minded and credit-wise secretary-treasurer, seasoned by some years of practical experience. Granted a strong and experienced board, the judgment and suggestions of five farmer directors, themselves borrowers, likewise prove of great value to the farmer and his wife whose credit problems are beyond their own ability to solve.

Moreover, through the more intimate acquaintance of secretary-treasurers and directors with members and with their individual situations the Bank taps a great reservoir of local information hitherto unavailable and highly valuable to the association and the Federal Land Bank.

The borrower now senses, as never before, that he really belongs to a cooperative credit organization; that this organization is genuinely concerned with his welfare as well as with its own.

Along with the progressive rehabilitation of national farm loan associations has come increased member interest. Special efforts have been made both by associations and the Land Bank to stimulate attendance of stockholders at the annual meetings.

The success of any cooperative enterprise depends upon an informed and interested membership. In an organization such as a national farm loan association in which most farmers require service but once in a lifetime, maintaining member interest is more of a problem than in an organization from which the member requires continuous service. We have a long way to go in member education on the subject of land mortgage credit, advantages, privileges and duties of members of national farm loan associations. However, we feel that some progress has been made evidenced by the fact that over twenty-two thousand national farm loan association members of the Fourth Farm Credit District attended annual meetings last year, a record of thirty-two per cent.

These annual meetings of the stockholders furnish an excellent opportunity for the sponsoring of an educational program designed

to increase member interest. Complete details of the associations' activities and their financial statuses are given the stockholders and emphasis is placed on the individual stockholder's direct interest in the system through investment in association stock.

Placing the associations on a business-like basis that insures them an adequate and stable income has usually resulted in a definite improvement in the type of secretary-treasurer throughout the District. We have not attained a uniform standard of excellence. Some, of course, who promise well, prove unable to measure up to the requirements of their positions. Nevertheless, we feel that continuous progress is being made in developing satisfactory personnel in associations.

Encouraged by the Bank, association directors are taking renewed interest both in association and Bank affairs. They are developing a sense of personal responsibility as the eyes and ears of the Bank in their respective communities, and are taking the initiative in solving, or forestalling, the credit problems of their associations and members. In many cases directors actively assist secretary-treasurers in handling problem collection cases.

At the time the Louisville Bank turned over the servicing job to the associations, our District had one of the lowest percentages of loan delinquency among the land banks of the country. The same record prevails today. Lower price levels for farm products, coupled with the requirement that all borrowers pay not only the interest but also the principal portions of their amortized installments (on which a temporary deferment had been granted), have necessitated a more thorough and active collection policy during the past ten months. We have found that some secretary-treasurers were not putting forth the necessary amount or the right kind of effort to meet this more difficult collection situation. Some were not keeping in close enough touch with the trouble cases to insure that borrower income was being properly applied to the mortgage debt, after the necessary family expense and operating cost had been met.

Several months ago Bank representatives met with the directors and secretary-treasurers of all associations to review and classify delinquent loans. The review disclosed no great increase in delinquencies of the serious type, the majority of loans not in good standing being delinquent on very recent maturities. An analysis indicates that greater activity on the part of secretary-treasurers with stronger emphasis on the responsibility of the borrower to his association and the necessity of maintaining his repayment program might have been effective in many cases.

Lagging secretary-treasurers are beginning to realize that loan

servicing is a more serious matter when the pinch of low prices curtails farm income. Increased activity by associations during the past few months has brought results. A very considerable number of delinquencies, which secretary-treasurers had first reported as uncollectable within the immediate future, have since been paid.

Ruthless collection methods have not been used. . . . Neither have we departed from the traditional policy of the land bank to stay with a borrower who is doing his honest best and has a reasonable possibility of working out of his difficulties. The temporarily delinquent borrower is encouraged to follow an orderly program of marketing his products, without speculating at the expense of the association and the Bank.

Secretary-treasurers are discovering that human equation in the science of servicing loans which sometimes impels the borrower to use funds for other purposes which should be devoted to debt retirement. Experience is teaching our secretary-treasurers the answer to many collection problems.

When it appears that a secretary-treasurer is "resting on his oars" we acquaint his directors with the facts and caution them that the Bank can justify continued payments of the servicing allowances to the association only if substantial improvement is made in the performance record and collection results of their secretary-treasurer. I recall one case where on August first, a certain association showed a delinquency of 11.6 per cent on Federal land bank loans, 12.2 per cent on Commissioner loans. The secretary-treasurer is a competent man, but apparently he had settled down in a groove and was not servicing his loans. He needed to be jarred a bit. Placing him on a probationary basis for ninety days provided the needed stimulus. Within three months his 11.6 per cent Federal land bank loan delinquency had shrunk to 1.7 per cent, the 12.2 per cent Commissioner loan delinquency to 5.9 per cent. In another association, during the same time and under the same conditions, an 8.3 per cent Federal land bank loan delinquency was reduced to zero, and a 17.9 per cent Commissioner loan delinquency to 4.2 per cent. Still another secretary-treasurer with active support from his directors cut a Federal land bank loan delinquency from 18.6 per cent to 4.4 per cent and a 25.1 per cent Commissioner loan delinquency to 4.6 per cent. We find that many secretary-treasurers who are capable and competent sometimes lag on the work; but that those who value their jobs and want to keep them can and do improve under proper training and direction. Of twenty-seven secretary-treasurers placed on probation last summer, twenty promptly pulled their repayment records up to normal.

Unquestionably the Bank always will need to maintain some degree of pressure and guidance upon associations in collection procedure. The ultimate application of collection policies, however, should rest with the association itself.

One might argue most convincingly that during years of farm prosperity a direct mail collection system would be more economical than the plan now being employed by our Bank in servicing outstanding loans. However, it is interesting to observe the operating costs and proved efficiency, during the hectic refinancing era, of the one land bank in the system which fostered and maintained strong association units in the field right from the beginning of the system. The per unit servicing and operating costs of that bank have been for a number of years, and still remain, one of the lowest in the system. During the heavy refinancing program this same bank led the other districts in terms of time, personnel and cost requirements involved in the closing of loans.

The sole purpose of the centralized system of collection of payments on Federal land bank loans is to get the money. . . . The Association plan provides, we believe, a more effective method of accomplishing the actual collection of money and at the same time fosters an active, local organization which if properly encouraged and led can be of service to its member-borrowers and the Bank which never can be measured in terms of dollars and cents.

Certain it is that if national farm loan associations are to form a solid foundation for a cooperative credit system (now quasi-public in nature and nationwide in scope of service), a system that may again be called upon to meet emergencies similar to that of the first half of this decade, then such associations must be given responsibilities which will keep them active and virile. They must also be assured of an adequate and reliable source of income on which to operate. The delegation of the loan servicing job to the associations provides them with the necessary responsibility and the required income. If the Federal Land Bank System, or more properly the National Farm Loan Association System, is to be and remain cooperative in character, then members must be informed and interested. This calls for a continuing program of member education. Neither national farm loan associations nor any other cooperative organization function automatically. A continuing service of education and information is essential.

TWENTY-NINTH ANNUAL MEETING OF THE AMERICAN FARM ECONOMIC ASSOCIATION

The twenty-ninth annual meeting of the American Farm Economic Association was held in Detroit, Michigan, Detroit-Leland Hotel, December 28, 29 and 30, 1938.

Annual Business Meeting

The annual business meeting of the Association convened at 9:00 A.M., Friday, December 30, 1938.

Report of the President

The principal duty of the President of the Association is to prepare the program for the annual meeting. The program is now nearly over and needs little comment. I am fully aware of certain weaknesses in the program which might be corrected, were the job to be done over.

You will note that the program consisted of three coordinated lines of interest that carried through most of the sessions.

1. General agricultural economics
2. Farm management
3. Marketing

Since the President is primarily responsible for the program, it is difficult to secure much continuity in programs from one year to the next. The program also reflects the special interests of the President. While this plan has some disadvantages, I believe it has more advantages, so long as we have a reasonable rotation of officers.

Following the precedent of last year, sessions were limited to two papers and two discussions of three papers and one discussion. This seemed to meet with the approval of the membership since it permitted more time for discussion from the floor.

One of the problems of the Association is the poor geographical distribution of membership and membership interest. There are a number of causes for this which will immediately occur to you. I am not sure that the Association can do much to improve this situation. Three great areas are poorly represented in membership and on the program. They are The Great Plains, The South and The Far West (except for California).

Two of these areas, The South and The Great Plains are generally recognized as having problems of special interest to econo-

mists. Perhaps a Committee of the Association might properly study this problem.

The Committee work of the Association was not extended much during 1938. A number of Round Tables were organized to study certain problems that might develop useful Committee work for next year. It is hoped that members of these Round Tables will feel free to make recommendations for Committees if the discussion revealed that further study would be desirable. Because of the fact that Committee work must usually be carried on by correspondence, the things that Committees can study to advantage are limited.

One of the real surprises that your officers experienced was the prompt and wholehearted response of the membership for requests for suggestions and the universal willingness to take part in the program and other activities of the Association. One hundred and eighteen persons accepted our invitation to take part in this program. In less than 10 per cent of the cases was it necessary to find an alternate because of inability to accept.

On behalf of the officers of the Association, I wish to thank you for your cooperation which has made our job a very easy one.

Respectfully submitted,
(signed) E. C. YOUNG, *President*

Report accepted as read.

Report of the Secretary-Treasurer

Finance: The Association's operating income for 1938 was $6,374.02 as compared with $6,194.03 for 1937. Expenses were $4,482.20 and $4,005.98 for 1938 and 1937 respectively. The surplus from operations was $1,891.82 in 1938 and $2,188.05 in 1937. Receipts from the Association's investments were $1,137.80 this year as compared to $563.05 last year. Hence the total net income for the year is $3,029.62 which is $278.52 in excess of that of last year.

The Committee on Investment Policy has reported its operations for the year in detail to the Executive Committee. It is well to point out here, however, that the market value of the Association's securities at the end of the fiscal year was $1,128.55 less than the cost. The figure for the same item last year was $2,291.00.

The operating and financial statements for the year ending November 30, 1938, follow:

OPERATING STATEMENT
THE AMERICAN FARM ECONOMIC ASSOCIATION
Year Ending November 30, 1938

Operating Income			
Receipts from dues		$ 6,150.02	
Back numbers sold		119.18	
Miscellaneous (mostly advertising)		104.82	$ 6,374.02
Operating Expense			
Journal of Farm Economics			
Vol. XX, 4 issues	$3,414.60		
Vol. XX, 4 reprints	280.42	$ 3,695.02	
Postage		263.53	
Annual Meeting expense			
Annual meeting, 1937	$ 284.27		
Arrangements for meeting, 1938	23.40		
Ballots and envelopes, 1938	13.00	320.67	
Back numbers purchased		53.00	
Office Supplies		41.80	
Miscellaneous		108.18	$ 4,482.20
Excess, receipts above expenses from operations			$ 1,891.82
Plus Non-Operating Income			
Interest on securities		$ 866.96	
Accrued interest, savings account		10.59	
Profit on sale of securities		260.25	$ 1,137.80
Total excess, receipts above expenses for the year			$ 3,029.62

FINANCIAL STATEMENT
THE AMERICAN FARM ECONOMIC ASSOCIATION
December 1, 1938

Assets			
Cash—bank balance	$2,684.97		
Less check outstanding	16.44	$ 2,668.53	
Stocks and bonds—cost*		19,072.30	
Savings account		537.36	$22,278.19

* Market value as of November 30, 1938—$17,943.75.

Proprietary Interest

Net worth, December 1, 1937.....		$19,248.57	
Plus net returns for the year			
Operating.....	$1,891.82		
Non-Operating.....	1,137.80	3,029.62	$22,278.19

Reprints: Through an arrangement with the publisher whereby the Association handles the collections for reprints, a savings of $90.00 in printing costs was realized.

Archives: During the year two complete sets of the JOURNAL were bound. These sets are kept in separate buildings in order to reduce the possibility of total loss by fire.

Membership: During the year 187 new members were added to our rolls and 149 withdrew or were dropped. The net gain for the year was 38 making a total membership of 1229, at the close of the fiscal year.

One hundred and twenty-one members were dropped because of delinquency in the payment of dues. Last year, one issue of the Journal was sent members after they became delinquent. It is now the policy of the Association to discontinue the Journal upon the date the member becomes delinquent. This practice will result in considerable financial saving.

The Association experiences a membership turnover in excess of 12 per cent per year. This high turnover places an undue expense upon the Association. It requires sustained effort upon the part of the office of the Secretary-Treasurer to maintain membership numbers.

The most difficult financial problem before the Association is that of delinquency in the payment of dues on the part of one-tenth of its membership. This is the weight that retards—almost stalemates—membership increases. Its importance cannot be minimized, for the Association can only hope to become self-supporting by means of an increased membership.

Respectfully submitted,
ASHER HOBSON, *Secretary-Treasurer*

Report accepted as read.

Report of the Auditor

I have examined carefully the account of the Secretary-Treasurer of the American Farm Economic Association for the year

ending November 30, 1938. I certify that all entries were checked against supporting vouchers and found in agreement. The assets of the Association were confirmed by an examination of the bank statement and by checking the securities owned by the Association.

I certify that the books have been carefully and neatly kept, and that the financial statement made by the Secretary-Treasurer reflects accurately the financial transactions and the financial situation of the Association as is shown by said accounts. The system of accounting now in use is a very satisfactory one, and the record of the Association's transactions can now be quickly and easily examined. For the competent manner in which these records are being maintained, I am sure that our Association is indebted to those in charge of this work.

Respectfully submitted,
(Signed) WALTER H. EBLING, *Auditor*

Report accepted as read.

Report of the Editor of the Journal of Farm Economics

Volume XX of the JOURNAL OF FARM ECONOMICS was issued during the past year. It included the usual four numbers. The 976 pages of Volume XX were used to publish 56 major articles, 22 discussions; 3 rejoinders; 23 notes; 42 book reviews; a section on news items in each issue; a 60-page index of Volumes XI-XX; and 6 pages were given over to the program of the Detroit meetings.

All of the papers, with the exception of one Round Table discussion presented at the Atlantic City meetings appeared in the Proceedings number. Accordingly the three remaining issues were devoted to articles, notes, and book reviews submitted for publication. From January 1 to December 20, 1938, a total of 91 papers were submitted to the Editor. These were disposed of as follows: not suited for JOURNAL, 28; returned for revision, 29; withdrawn, 3; resubmitted after being returned for revision, 19; accepted for publication, 43; papers (recent) on which no action has been taken, 13.

The Editor was fortunate to obtain the assistance of Mrs. Florence Nichols whose long experience as managing editor of the IOWA JOURNAL OF SCIENCE has proved most valuable in handling the considerable editorial detail involved in preparing the JOURNAL. The Editor is much indebted to Mrs. Nichols for her careful and painstaking handling of the routine work of his office. To his colleagues,

Professors Murray and Hopkins, he is indebted for their willingness to add to their already many duties and help in the editing of the note and book review sections. The response of the Editorial Council to the Editor's quest for advice on questions of policy has been not only helpful but one of the more important compensations of being intrusted with this office.

Respectfully submitted,
(signed) T. W. SCHULTZ, *Editor*

Report accepted as read.

Board of Election Tellers

The total number of ballots counted was 494. The following officers were elected:

President	I. G. Davis
Vice-Presidents	F. F. Elliot
	F. V. Waugh
Secretary-Treasurer	Asher Hobson

(signed) GEORGE W. COLLIER
W. D. NICHOLS

The above officers were declared elected to hold office for the year 1939.

Executive Committee Action

Meeting of December 28, 1938

The Committee recommends that the provision in the Constitution relating to the nomination of officers remains unchanged.

The Secretary is instructed to vote for Chicago as the place of meeting in 1940.

The Committee looks with favor upon a continuation of the present policy of "exchange advertising" with other social science associations.

The Committee approves the policy of cooperation with the International Conference of Agricultural Economists in extending the memberships of the Conference in the United States.

The sale price of the "Index to Volumes XI-XX, JOURNAL OF FARM ECONOMICS" is set at $1.00 per copy.

Changes in the form of the JOURNAL as initiated by the Editor during 1938 were approved.

The Secretary is authorized to issue a membership directory during 1939.

The Secretary is authorized to pay the expenses incurred in holding the annual dinner meeting of the Executive Committee.

The Committee approves the proposal to recognize the one-hundredth anniversary of the formal participation by the government in the collection and dissemination of agricultural data. The Editor is requested to explore the possibilities of devoting considerable space in one number of the JOURNAL to articles related to the development and status of the agricultural data field.

Meeting of December 30, 1938

The Committee requests the Secretary to secure before the annual meetings advance drafts of committee reports to the Association, and undertake in collaboration with the committee chairmen to prepare suitable versions for publication.

The Committee endorses the proposal of adequate recognition in the JOURNAL of the one hundredth anniversary of the active participation on the part of the government in the collection and dissemination of agricultural data, and expresses the hopes that the proposal may be carried to a successful conclusion.

T. W. Schultz was appointed Editor for the year 1939.

The Executive Committee of the American Farm Economic Association after careful consideration of a report by its special committee on the Census of Agriculture is of the opinion that the accuracy, value, and effectiveness of the Census would be furthered by the use of January first, 1940 as the date of enumeration. The use of this date would avoid many of the difficulties which have developed when a spring date was used in certain previous enumerations. Many hundreds of thousands of farm tenants move during the winter months to farms not occupied the previous year. Such farmers cannot report accurately with respect to the farms they have moved onto in this period. Livestock numbers and similar items are likewise on a more stable and comparable basis at the first of the year than in the spring. Furthermore, enumeration is made a much more difficult task if carried out in the busy spring months than if undertaken in the relatively slack period of the first of the year. In view of these facts and our knowledge of the views of members of this Association we urgently recommend that the 1940 Census be taken as of January first.

The Committee accepts the report of the Committee on the Census of Agriculture, and authorizes the President to transmit it

to Professor S. H. DeVault, the Association's representative on the Advisory Committee to the Division of Agriculture of the Census.

In order to furnish transfer officers of corporations with the necessary evidence that the Secretary-Treasurer is authorized to transfer securities in the name of the Association, the following resolution is adopted.

"RESOLVED, that the Secretary-Treasurer who is also Chairman of the Investment Policy Committee, be and is hereby authorized and empowered, for, and in the name and on behalf of this Association to take any and all such steps, and to do any and all such things, as may be necessary, required and appropriate for, or in connection with, the purchase, acquisition acceptance, handling, pledging, sale, or other disposition of stocks, bonds and other securities belonging to the Association or pertaining to its business, including the execution and delivery for and in the name and on behalf of this Association, of any and all endorsements, transfers and assignments of certificates of stock, bonds or other securities standing in the name of this Association, either for the purpose of sale or transfer, and all such other steps and action as may be necessary or proper in connection therewith."

Report of the Agricultural Census Committee[1]

Your Committee on the Census of Agriculture, through correspondence, personal conferences, and a meeting held yesterday, has formulated recommendations with respect to certain aspects of the 1940 Census of Agriculture. These are submitted for consideration by the Association's Executive Committee and for such use as it may deem appropriate. We recommend, however, that in whole or in part, they be brought to the attention of the Association's representative on the special advisory committee to the Division of Agriculture of the Census.

Date of Enumeration.—Since the 75th Congress did not formulate and pass new legislation with respect to the United States Census, the legislative provisions for the 1940 enumeration become automatically those set up for the 1930 Census. That act provides for taking the Census as of April 15, 1940. This is a very undesirable date for an agricultural census. First, it does not provide comparability with the enumeration dates of the 1935 Census of Agriculture nor with that of 1925. Many adjustments and estimates are necessary to bring these into harmony. Second, April 15

[1] The more extended report of the Committee is on file in the Office of the Secretary-Treasurer, and is available to members of the Association.

strikes one of the busiest periods on the farms of the country and increases materially the difficulty of obtaining a good enumeration, since farmers are very reluctant to take the time necessary for filling out a lengthy schedule at that time. Third, it strikes into the period of rapid change in livestock numbers and complicates very seriously the problem of comparability in livestock numbers. Fourth, tenant farmers are required to report on the farms then occupied. A very large percentage of them, possibly as many as one-third are at that date located on farms they did not operate the previous year, hence their knowledge of acreages, production, etc., for the farm occupied cannot be accurate.

In view of these serious disadvantages to the use of April 15 as a date of enumeration, we recommend to the Executive Committee that it take all suitable steps to bring to the attention of government officials and the Congress the desirability of an act early in the coming session of Congress which will change this date to January 1, 1940.

Method of Enumerating and Tabulating Data Pertaining to Plantations and Croppers in the Southern States.—In recent enumerations the procedure has been to classify croppers as tenants and to regard the acreages operated by them as farms. Most students of the agriculture of the Southern States feel that this presents a very unreal picture of the situation, since most of the plantations are operated as farm units and croppers are to all intents and purposes wage laborers paid in kind rather than in cash. With the growing tendency to use cash wage labor, and to shift from year to year from the cash basis to the share basis, the enumeration of these holdings as farms provides a very undependable recording of numbers of farms. It is the view of this committee that the determining element as to whether a given operator should be regarded as a farmer or a laborer lies in the degree of responsibility he has for decisions as to cropping and management of the tract operated by him. It is felt that a useful result will be achieved if that unit which is operated by a given entrepreneur is regarded as a farm and the employees thereon if paid in kind are treated as laborers with a special type of compensation. Mechanical methods of production are being rapidly introduced in the South and there is a marked trend in the direction of converting workers of this class into cash wage hands. If that results, there will be shown in each succeeding Census a continuing reduction in the number of farms. While this apparent reduction will appear in the Census tabulations, it will not necessarily be an actual reduction in numbers of entrepreneurs. The entrepreneurial unit is a much more stable basis for all computations with respect to numbers of farms.

The Census Bureau, on the other hand, and also some students of Southern agriculture, are concerned that comparability with previous enumerations be maintained as fully as possible. It is the belief of this committee that both these objectives can be attained with only minor modifications of the Census procedure in enumerating and tabulating data pertaining to the agriculture of the cotton region.

Farm Definition and a Classification of Farms.—The problem of farm definition has recurred in connection with every Census enumeration. There is obviously considerable advantage in maintaining uniformity in this matter from Census to Census, and if any changes are made, the adjustment should be so handled that the farms so included or excluded can be identified and thus can be added or subtracted to give a figure comparable to previous enumerations. There is, however, a widespread feeling that some differentiation should be made between the so-called commercial farm and the small holding which has no important significance in producing products which move in commercial channels.

A subcommittee of this committee has undertaken to draft a proposal for making a segregation between these two types of farms.

With respect to the lower limit of inclusion, it is our feeling that this should be retained on the same basis as in the 1935 Census and that enumerators should be asked to include all holdings which in their judgment might qualify as farms or small holdings; the borderline cases being edited in accordance with specific standards set up in the Census Bureau. A modified form of this procedure was used in 1935 and gave relatively good satisfaction. It avoids in considerable measure the unevenness of coverage which arises from attempts on the part of the numerous enumerators to make decisions in the field as to what properties shall or shall not be regarded as farms.

Completeness of Enumeration.—We urge the utmost effort in securing complete enumeration of all units which should be included as farms or small holdings. The attainment of this goal rests primarily on the organization of the field work and on the quality of the personnel secured in supervisors and enumerators. As a means to this end, we recommend that members of this association who are interested in these problems cooperate closely with the Bureau of the Census and with their own Congressional delegates with a view to securing particularly in the supervisors the best available personnel. In addition to this, we recommend that the Bureau provide suitable examinations for all candidates with a view to eliminating those whose experience or other qualifications

do not fit them for carrying out a thorough and a complete enumeration. With the greatly improved mapping of farm locations which will be available for most of the states by the time of the 1940 Census, it is our expectation that competent supervisors can make a much better check on the completeness of enumeration than has been possible at previous Census periods.

Farm Labor Questions.—The trial schedule carries an inquiry on amounts of labor employed on each farm for each of four periods in the year, namely January 1, April 1, July 1 and October 1. If this information can be secured there will be provided for the first time a very important body of information with respect to amounts of farm labor by areas, by types of farming, etc. Unfortunately these questions proved very difficult ones in the field test of last January, particularly in those areas where the information sought is of the greatest importance. There is danger that because of these difficulties, the Bureau may feel it desirable to revert to the former basis of enumerating numbers of laborers on the farms only as of the time the Census is taken. We cannot urge too strongly the desirability of a serious attempt to get this information, even though we recognize the difficulties involved.

Special Supplementary Schedules.—From the standpoint of operations on the part of Census enumerators and tabulators, supplementary schedules present very serious problems both in added expense and in greater possibility of error. Furthermore, these operate to slow up the field enumeration. For these reasons, we agree with the Census officials that such special schedules should be kept at a minimum. We do recommend, however, that a special additional crop schedule be used for the state of California and possibly for one or two other areas where the number of crops necessarily omitted through use only of the general schedule is serious.

Special Regional Problems.—Aside from the difficulty mentioned in the preceding section, certain regions have presented especially difficult problems. Of these the one which has been most carefully studied is the New England area. At the request of this committee a subcommittee of New England economists has given special consideration to the problems of that area. Its recommendations are on file and may be had from the chairman of this committee or the President of the Association.

Values of Land and Buildings.—The inclusion of these questions has been controversial for a number of years not from the standpoint of their importance, but from the standpoint of the possibility of getting accurate results, also from the difficulties they present from the standpoint of the enumerator. We

recommend serious consideration jointly by the Census Bureau, the Bureau of Agricultural Economics, the Farm Credit Administration, and other agencies in the possibility of developing a more accurate procedure for getting a more satisfactory basis for estimates of this kind. This might be a combination of sampling with assessment records or other source of information.

General Assistance to the Bureau of the Census in the Attainment of a Good Enumeration.—We cannot recommend too strongly a conscientious effort on the part of members of this and other research groups to strengthen the hand of the Census Bureau in getting the desired information. These are the people who will have the greatest use for the data collected and the greatest concern with the accuracy and adequacy of the enumeration. They can be helpful in several ways: (1) in building up with their local Congressional representatives a serious attitude toward securing the most competent available supervisors and enumerators; (2) bringing to such representatives a realization of the necessity for adequate appropriations to carry out a competent and suitable enumeration; (3) counseling with officials of the Census Bureau including the supervisors in securing the best available personnel; (4) in building up through farm organization contacts, news items, and other channels an understanding on the part of farmers of the purposes of the Census and fostering a willingness on the part of farmers to cooperate to the fullest possible extent. It is the hope of this committee that the membership of the Association will accept its responsibilities in this connection and will seek both through constructive criticism and active cooperation to improve the quality of each succeeding Census enumeration.

Respectfully submitted,
(signed) M. R. BENEDICT, *Chairman*

Report accepted as read.

Report of the Committee on Marketing Research

The work of the Marketing Research Committee has continued along the same general lines as during the two previous years. It is attempted to formulate a general approach to research in the economics of marketing with particular emphasis upon the broader social aspects of the problem. So far the committee has prepared a general statement covering this point of view, defining the scope of its work and giving preliminary consideration to objectives in marketing research. It has illustrated this general approach with four outlines dealing with particular areas of research which show the diversity of analytical methods that are required in dealing with marketing problems of a fundamental economic character.

This plan of work has evolved in part through discussion in Round Tables held at the past three Association meetings. As a result of last evening's Round Table the committee plans to consolidate its work in the form of a fairly comprehensive progress report during the coming year.

Respectfully submitted,
(signed) F. V. WAUGH, *Chairman*

Report acepted as read.

Report of the Committee on Definition of Terms in Farm Management

The Committee on Definition of Terms in Farm Management has reviewed the reactions of a considerable number of Farm Management workers to the group of terms and definitions assembled a year ago from a survey of Farm Management literature. It also gave further consideration to the definitions of Farm Management, and of a selected group of terms used in summary statements of a year's farm business. A pamphlet was mimeographed in which was listed:

1. Terms and definitions previously submitted to Farm Management workers for their consideration.
2. The number of persons who indicated a preference for specific definitions.
3. New definitions submitted by workers.
4. Pertinent comments on the selected terms and definitions.
5. The main points of difference in terms and definitions which pertained to the same concept.

The above report was sent to Farm Management workers with a request that, on the basis of the additional information in the report, they again indicate a preference or offer additional suggestions. It was hoped that more accord would be indicated than was manifest in the first survey.

Local committees or individuals at 29 institutions reviewed and returned the questionnaire pamphlet to the Committee. There was somewhat more accord in the replies than a year ago, but differences continued to be numerous and fundamental. In some instances differences reflected the influence of regional conditions and in others they reflected the influence of the purposes for which the data were to be used.

Among the outstanding points concerning which different viewpoints were expressed are:

1. *The definition of farm management.* The differences seem to group

around those which would limit the meaning of farm management to a consideration of the economy of internal organization, and those which would extend the meaning to include the collective and social economy of agricultural production and the interrelationships between the internal economy and group problems.

The definition which was favored in substance by about 80 per cent of those replying was, "Farm Management is the science that considers the organization and operation of a farm from the point of view of efficiency and continuous profit."

It should not be construed, however, that in favoring the above definition, 80 per cent would favor confining farm management to internal economy, for qualifications in some of the replies indicate that they considered the above definition as covering the broader concept.

2. *The inclusion or exclusion of the operator's dwelling in farm capital.* About two-thirds of the replies favored the inclusion of the operator's dwelling. The reactions of State people on this point would seem to be influenced by regional conditions. Practically all Eastern States think the dwelling should be included, while most of the support for leaving it out came from the Middle West.
3. *The method by which farm products furnished by the farm are credited to the business—in farm receipts, farm income, or farm earnings.* The replies to the survey on this point serve to indicate that a variety of methods exist, and that the use of any one of the above terms does not mean the same thing in the various states because of the differences in items included and, in some instances differences in terminology for the same grouping of items. For example, some States include farm products used on the farm in what they term farm income; in other States farm income excludes farm products used, but the term farm earnings is used to cover their inclusion.

Although considerable progress has been made in obtaining accord particularly with reference to certain definitions, the Committee believes, in view of the fundamental bases for differences in opinion on many points, as illustrated above, that further study and exchange of points of view is needed before any selection of terms or precise definitions are recommended to the Association for approval. Many Farm Management workers who have been cooperating with the Committee, have suggested the desirability of further consideration. For example, a favorable reaction to the statement in the questionnaire that "the whole income and expense set-up needs to be re-examined to see if we cannot work out some-

thing more revealing of the situation on individual farms" was more nearly unanimous than on any other point.

The range of usefulness of statements prepared for various purposes would be greatly increased if the data were sufficiently itemized as to permit considerable flexibility in recombining items for other purposes and for obtaining comparability in two or more statements.

There are a number of items which frequently are handled differently in different statements. Among these items are:

1. Farm dwelling as farm capital, as contribution of the farm to family living, and as a source of farm expense.
2. Current cash to run the farm as a part of farm capital.
3. Classification of crops held for sale as receipts or as a part of the farm inventory.
4. Contribution of the farm to family living as a part of farm income.
5. Separation of cash and non-cash income.
6. Summarizing income and expenses into a net value by enterprises or by groups of enterprises.
7. Grouping of income from livestock and livestock products.
8. Designation of the sum of income items when they include the contribution of the farm to family living and when they exclude it.
9. Inclusion in income of value of farm products used in furnishing board and perquisites to hired laborers.
10. Inclusion in farm expenses of value of unpaid family labor.
11. Inclusion in farm expenses of value of board and perquisites furnished hired labor.
12. Valuation of all items for which values are imputed, particularly value of family labor, operator's labor, and board furnished hired laborers.
13. Designation of the residual income after deducting farm expenses.
14. Designation of the income distributable to labor and to capital.

In view of these differences the Committee feels the need of much additional study and exchange of views by the whole group. We therefore recommend that a Committee on Definitions of Terms in Farm Management be continued and special consideration be given to the following points:

1. A differentiation between the purposes for which farm capital, farm income and farm expense data are obtained.
2. A procedure adapted to reporting data in a manner that will serve each purpose.

3. A form of farm business statement which will sufficiently itemize capital, income, and expense data as to permit a considerable range of flexibility in summarization for different purposes and according to various conventional methods.
4. Accord in the degree of flexibility of terms rather than one-hundred per cent uniformity.

Your Committee continues the feeling that probably the greatest benefits of its work have been the cooperation and participation of the large group of research, extension, teaching, and other workers in the exchange of views on problems, terms, and procedures. We very greatly appreciate the spirit and fine way in which so many have worked so closely with us in obtaining the views and recommendations of such a large and representative group of workers in this field.

Respectfully submitted,
(signed) H. M. DIXON, *Chairman*

The Committee was instructed to publish its findings in the form of a progress report.

Report of the Committee on Recruiting and Training Personnel

During the past year, the Committee on Recruiting and Training Personnel in agricultural economics has cooperated with a similar committee of the Social Science Research Council in an attempt to get under way a comprehensive survey of the personnel in the field and in training and of the facilities for training men in this field. As yet, nothing definite has been accomplished but it is hoped that provision for such a study, adequately financed, may be made within the near future.

The need for such a survey is urgent and it is recommended that provision be made for continuance of a committee to stand ready to cooperate actively in case satisfactory arrangements can be made for such a survey.

Respectfully submitted,
(signed) W. E. GRIMES, *Chairman*

Report accepted as read.

Report of the Committee on Professional Farm Management

Committees representing the American Farm Economic Association and the American Society of Farm Managers and Rural Appraisers met to consider possible cooperation between these two organizations.

It was decided:

1. That these organizations have many mutual interests which means that cooperation is not only desirable but can be valuable to each;
2. That the cooperation of each be kept on an informal basis for the present and let future needs determine the extent and nature of future cooperation;
3. That a permanent joint committee should be appointed to work together constantly seeking means of cooperation in keeping with the basic harmony of interests between the two organizations.

Possible plans for cooperation were discussed and thought worthy of recommendation, as follows:

1. The American Society of Farm Managers and Rural Appraisers arrange their Summer meetings particularly with the idea of making them of interest and value to members of the American Farm Economic Association;
2. That each of these organizations consider the possibility of carrying in their journals an announcement of coming meetings of the other association;
3. That, when the meetings of the American Farm Economic Association are held in the midwest, the American Society of Farm Managers and Rural Appraisers consider the holding of its Winter meetings at the same time and place;
4. That there is a basic need of cooperation within these two organizations in the furnishing of problems for economic research and supplying of data upon which to base such research;
5. That the members of each organization should know more about the other organization and that it might be helpful if the journal of each carried a brief explanation of the plan of organization and the type of work undertaken by the other organization.

Respectfully submitted,
(signed) L. S. ROBERTSON, *Chairman*

The following motion submitted by the Committee was adopted. That a Committee of the American Farm Economic Association be appointed to work with a Committee of the American Society of Farm Managers and Rural Appraisers to bring about closer cooperation between the two organizations in matters of mutual interest.

The proposal submitted at the last annual meeting for consideration by this meeting, to revise the method of nominating officers was discussed and a motion to table was adopted.

The following sentence was deleted from Article VI of the Con-

stitution: "This amount is divided as follows: Annual dues, fifty cents; and annual subscription to the JOURNAL OF FARM ECONOMICS four dollars and fifty cents."

The President expressed on behalf of the Association its appreciation of the activities of the Committee on Local Arrangements and voiced especial thanks to R. V. Gunn and E. B. Hill, the Association's representatives on the Committee, and to G. R. Husband, Chairman of the Committee.

The Committee on Farm Credit provided for in 1932 to cooperate with the National Joint Committee on Rural Credits presented no formal report. During the past year a farm appraisal report was prepared by the national committee and should appear as one of the papers published in the JOURNAL.

It was recommended by the chairman, H. C. M. Case, that the committee be discharged, but that the President of the Association be authorized to appoint members of the Association to cooperate with the National Joint Committee on Rural Credits should such action be deemed advisable. The above recommendation was adopted.

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Cowling, Ellis, *Co-operatives in America*, New York, Coward-McCann, Inc., 1938, xvii, 206 pp., $2.00.

Decken, Hans v. d., *Entwicklung der Selbstversorgung Deutschlands mit Landwirtschaftlichen Erzeugnissen*, Berlin, Verlagsbuchhandlung Paul Parey, 1938, 152 pp., Rm. 11.60.

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Elazari-Volcani, I., *Planned Mixed Farming*, Rehovot, Palestine, Jewish Agency for Palestine, Agricultural Research Station, 1938, xv, 154 pp.

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Nourse, Edwin G., and Horace B. Drury, *Industrial Price Policies and Economic Progress*, Washington, D. C., Brookings Institution, 1938, xx, 314 pp., $2.50. (Reviewed in this issue.)

Odum, Howard W., and Harry Estill Moore, *American Regionalism*, New York, Henry Holt and Co., 1938, x, 693 pp., $5.00. (Reviewed in this issue.)

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Shaw, Eldon E., and John A. Hopkins, *Trends in Employment in Agriculture, 1909–36*, Philadelphia, Nat'l Research Project of WPA, 1938, xvi, 163 pp.

Vaile, R. S., and Helen G. Canoyer, *Income and Consumption*, New York, Henry Holt and Co., 1938, xv, 394 pp., $2.25.

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Wickizer, V. D., *Shipping and Freight Rates in the Overseas Grain Trade*, Stanford Univ., Calif., Food Research Institute, 1938, pp. 49–120, $1.00.

Zimmerman, Carle C., *The Changing Community*, New York, Harper and Brothers, 1938, xiii, 661 pp., $3.50.

REVIEWS

State and Local Barriers to Interstate Commerce in the United States. by Frederick E. Melder. University of Maine Studies, No. 43, 1937, pp. xiv+181, $.75.

The appearance of this bulletin represents a distinct service to the economists, and perhaps to the legislative bodies of the countries. In spite of the clear-cut intention and declaration of the constitution, and contrary to many general, and loose, statements, there has not, for many years, been absolute, untrammelled commerce among the states of the Union. While cotton, wheat, and butter have had free access in nearly all cases, to the many markets of the country, Texas cattle have been restricted by quarantine, plants of many kinds have been rejected in many quarters lest they carry insects or disease, while automobiles have been searched for sweet corn which might be the host of the corn borer.

These restrictions do not, however, illustrate the issue discussed in the bulletin. States may properly pass and enforce sanitary measures. On the other hand, when a state passes and enforces acts intended to give themselves advantages over sister states, like in every important particular, to the tariffs and other restrictions imposed by nations against any and all outsiders, with the one purpose of economic advantage, one may well ask whether we are indeed one nation, or forty-eight; or may revive the cynical query of a generation ago: "What is the constitution between friends?"—or against rivals? An answer to the query is found in state acts on oleomargarine which have, with a few exceptions, frequently on curious grounds, been upheld by the courts.

The impression which the bulletin gives the reader is that while we knew that as a group of states we had gone far afield in our search for ways and means to stifle free trade among ourselves, such as the innocent framers of the constitution had in mind, few of us, indeed, were aware of the progress that has been made in creating effective barriers, in addition to those pertaining to distance and friction. Interestingly these barriers involve the primary questions of labor, agriculture and manufacturing; also derivative considerations covering trade, taxation and transportation. All these, in contrast with the tendency toward concentration of powers in the federal government, seem designed to suggest, if not to prove, that our commonwealths are still "sovereign and

independent states." The author has discussed these many parts of the general theme under the following chapter headings:

The Tradition of a Free National Market
The States Buy as They Please
Favoring Home Industry by Differential Taxation
Protecting the Home Merchant
Promoting Provincialism by Motor Vehicle Taxation and Regulation
Protecting the Farmer—Oleomargarine Legislation
Protection of the Dairy Farmer—Milk Market Restrictions
Protection of Home Agricultural Markets by State Quarantine and Inspection Laws
State and Municipal Protection of the Taxpayer and Resident Laborer
State Restrictions on Exports
Conclusions

An appraisal of the effects of the many laws restricting the flow of goods, the employment and migration of labor, and the attempt to exclude "big business" from the home town, which are creating a new provincialism, and sectionalism, as the outgrowth of a "scarcity consciousness" leading a growing succession of groups to attempt protection against the competition of other producers within our own borders is found in succinct form in the concluding chapter.

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